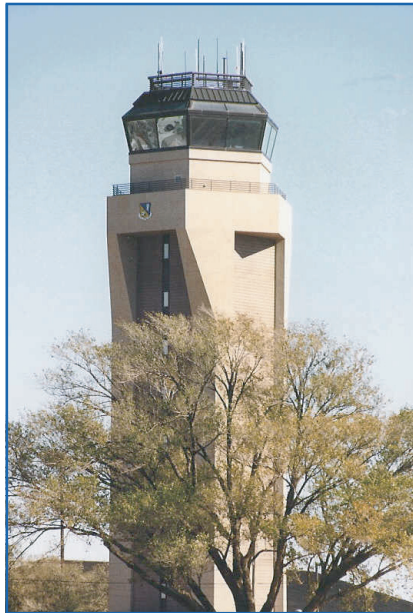


Wing Infrastructure Development Outlook (WINDO) for Cannon AFB, New Mexico

Environmental Assessment



Air Combat Command
December 2004

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 00 DEC 2004		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE Wing Infrastructure Development Outlook (WINDO) for Cannon AFB, New Mexico Environmental Assessment				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Air Force Air Combat Command Langley AFB, VA 23665				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 121	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

ACRONYMS AND ABBREVIATIONS

27 FW	27 th Fighter Wing	NMED	New Mexico Environment Department
AAQS	Ambient Air Quality Standards	NMNHP	New Mexico Natural Heritage Program
ACM	Asbestos Containing Material	NMRPTC	New Mexico Rare Plant Technical Council
ACC	Air Combat Command	NO _x	Nitrogen Oxides
AFB	Air Force Base	NO ₂	Nitrogen Dioxide
AFI	Air Force Instruction	NRCS	Natural Resources Conservation Service
AFOSH	Air Force Occupational Safety and Health	NRHP	National Register of Historic Places
AGE	Aerospace Ground Equipment	NSR	New Source Review
AICUZ	Air Installation Compatible Use Zone	NPDES	National Pollutant Discharge Elimination System
Air Force	United States Air Force	O ₃	Ozone
APZ	Accident Potential Zone	OSHA	Occupational Safety and Health Administration
AQCR	Air Quality Control Region	P2 Plan	Pollution Prevention Program Plan
AST	Aboveground Storage Tank	Pb	Lead
BMP	Best Management Practice	P.L.	Public Law
CAA	Clean Air Act	PM _{2.5}	Particulate Matter Less Than or Equal to 2.5 micrometers in diameter
CE	Civil Engineering	PM ₁₀	Particulate Matter Less Than or Equal to 10 micrometers in diameter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ppm	Parts Per Million
CEQ	Council on Environmental Quality	PSD	Prevention of Significant Deterioration
CFR	Code of Federal Regulations	QD	Quantity-Distance
CO	Carbon Monoxide	RBTI	Realistic Bomber Training Initiative
dB	Decibel	RCRA	Resource Conservation and Recovery Act
dBA	A-weighted decibel scale	RI	Remedial Investigation
DD	Decision Document	ROD	Record of Decision
DNL	Day-Night Average Sound Level	ROI	Region of Influence
DoD	Department of Defense	SCS	Soil Conservation Service
DTI	Defensive Training Initiative	SHPO	State Historic Preservation Office
DV	Distinguished Visitor	SI	Sampling Investigation
EA	Environmental Assessment	SIP	State Implementation Plan
EO	Executive Order	SO _x	Sulfur Oxides
EOD	Explosive Ordnance Disposal	SO ₂	Sulfur Dioxide
EPCRA	Emergency Planning and Community Right-To-Know Act	SRMC	Sustainment, Restoration and Modernization By Contract
ERP	Environmental Restoration Program	SWMU	Solid Waste Management Unit
ESA	Endangered Species Act	SWQB	Surface Water Quality Bureau
FAA	Federal Aviation Administration	TPY	Tons Per Year
FICON	Federal Interagency Committee on Noise	TSP	Total Suspended Particulates
FONSI	Finding of No Significant Impact	µg/m ³	Micrograms Per Cubic Meter
FS	Feasibility Study	U.S.	United States
FY	Fiscal Year	USACE	United States Army Corps of Engineers
H ₂ S	Hydrogen Sulfide	USC	United States Code
HAP	Hazardous Air Pollutant	USEPA	United States Environmental Protection Agency
HUD	Housing and Urban Development	USFWS	United States Fish and Wildlife Service
IAP	Initial Accumulation Point	VOC	Volatile Organic Compound
IRP	Installation Restoration Program	WINDO	Wing Infrastructure Development Outlook
kg	Kilograms		
MAFR	Melrose Air Force Range		
MILCON	Military construction		
MOGAS	Motor Gasoline		
mph	Mile Per Hour		
NAAQS	National Ambient Air Quality Standards		
NAF	Non Appropriated Funding		
NEPA	National Environmental Policy Act		
NFA	No further action		
NHPA	National Historic Preservation Act		
NMAQB	New Mexico Air Quality Bureau		
NMDGF	New Mexico Department of Game and Fish		

FINDING OF NO SIGNIFICANT IMPACT

NAME OF PROPOSED ACTION. Environmental Assessment for Wing Infrastructure Development Outlook (WINDO) for Cannon Air Force Base (AFB), New Mexico.

DESCRIPTION OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE. The United States Air Force (Air Force) proposes to implement its WINDO for Cannon AFB. The WINDO is a plan identifying construction projects proposed to improve the physical infrastructure of Cannon AFB. These infrastructure improvements would provide quality facilities needed to support current and future missions of the 27th Fighter Wing (27 FW). The WINDO includes construction and demolition projects which would occur at Cannon AFB and nearby Melrose Air Force Range (MAFR).

Specific Cannon AFB projects analyzed in this EA are:

- 1) Demolition of Abandoned Taxiway
- 2) Construction of Entomology Shop
- 3) Construction of Aerospace Ground Equipment Complex
- 4) Construction of Dining Hall/Airmen's Center
- 5) Construction of Communications Facility
- 6) Construction of Base Library/Education Center
- 7) Construction of Fitness Center
- 8) Construction of Transportation Complex
- 9) Construction of Civil Engineering Pavements and Equipment Shop
- 10) Construction of Billeting Office/Distinguished Visitor Suites
- 11) Construction of Raw Wastewater Storage Basin
- 12) Construction of Fill Stands.

The specific projects at MAFR are:


- 1) Construction of Range Control Tower
- 2) Construction of Range Control Building
- 3) Renovation of Fire Station 3.

Under the No-Action Alternative, some or all of the proposed construction and demolition projects would not be implemented. Selection of the No-Action Alternative would result in continued use of deteriorating facilities. Cannon AFB and the 27 FW would not adequately meet future mission requirements or provide for improved quality of life for personnel due to deteriorating facilities.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES. This EA provides an analysis of the potential environmental consequences under the Proposed Action and No-Action Alternative. Environmental resources evaluated in detail for potential environmental consequences were land use, infrastructure, socioeconomics and environmental justice, cultural resources, biological resources, physical resources, air quality, hazardous materials and waste management, safety, and noise. No impacts are expected to infrastructure, environmental justice, cultural, biological, or physical resources.

The WINDO projects are consistent with base land use, noise and safety planning. Short-term socioeconomics benefits are expected in the region due to construction employment. Infrastructure elements will be adequate for the WINDO projects, with some increase in vehicular traffic likely during construction. Hazardous materials, such as asbestos, lead and solid waste would be generated during associated demolition projects. All federal and state regulations regarding asbestos and lead will be followed. Solid waste would be recycled when possible; no appreciable amount of waste is expected. Air quality, noise, hazardous materials and waste management may be adversely impacted, but not significantly. Air pollutants and noise levels would increase during construction, but not to harmful levels; no long-term impacts are expected. No cumulative effects or irreversible or irretrievable commitment of resources are expected to any of the resource categories if the Proposed Action were implemented.

CONCLUSION. Based on the findings of this EA conducted in accordance with the requirements of the National Environmental Policy Act (42 United States Code 4321-4347), Council on Environmental Quality (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR 989, et seq., *Environmental Impact Analysis Process* (formerly known as Air Force Instruction 32-7061), and after careful review of the potential impacts, I conclude implementation of the Proposed Action would not result in significant impacts to the quality of the human or the natural environment. Therefore, a Finding of No Significant Impact is warranted, and an Environmental Impact Statement is not required for this action.


JOHN D. POSNER, Colonel, USAF
Commander, 27th Fighter Wing

22 Nov 2004
Date

**ENVIRONMENTAL ASSESSMENT
WING INFRASTRUCTURE
DEVELOPMENT OUTLOOK (WINDO)
FOR
CANNON AIR FORCE BASE, NEW MEXICO**

**United States Air Force
27th Fighter Wing**

December 2004

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1.0 PURPOSE AND NEED FOR ACTION	1
1.1 Introduction	1
1.2 Background	1
1.2.1 Cannon Air Force Base	2
1.2.2 Melrose Air Force Range	2
1.2.3 Cannon WINDO EA	2
1.3 Purpose and Need	5
2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES	6
2.1 Proposed Action	6
2.1.1 Planning Approach and Criteria	6
2.2 No-Action Alternative	12
2.3 Environmental Impact Analysis Process	12
2.3.1 Agency Coordination	13
2.3.2 Regulatory Compliance	13
2.3.3 Permit Requirements	14
2.4 Comparison of Alternatives	15
3.0 AFFECTED ENVIRONMENT	16
3.1 Land Use and Visual Resources	16
3.1.1 Land Use	16
3.1.2 Visual	18
3.2 Infrastructure	18
3.2.1 Transportation	18
3.2.2 Electrical Distribution	18
3.2.3 Water and Wastewater System	18
3.2.4 Natural Gas System	19
3.3 Socioeconomics and Environmental Justice	19
3.3.1 Environmental Justice	20
3.4 Cultural Resources	21
3.4.1 Archaeological Resources	22
3.4.2 Architectural Resources	22
3.4.3 Traditional Resources	23
3.5 Biological Resources	23
3.5.1 Terrestrial Communities	23
3.5.2 Wetlands and Other Waters of the U.S.	24
3.5.3 Threatened and Endangered and Special Status Species	25
3.6 Physical Resources	28
3.6.1 Water Resources	29
3.6.2 Soils	30
3.7 Air Quality	31
3.7.1 Federal and State Air Quality Standards	31
3.7.2 Regional Air Quality	35

3.8	Hazardous Materials and Waste Management	37
3.8.1	Hazardous Materials	37
3.8.2	Hazardous Waste.....	38
3.8.3	Storage Tanks	39
3.8.4	Solid Waste Management	39
3.8.5	Asbestos.....	40
3.8.6	Environmental Restoration Program	40
3.9	Safety	41
3.9.1	Ground Safety.....	42
3.9.2	Explosives Safety.....	42
3.10	Noise	43
3.10.1	Existing Conditions	47
4.0	ENVIRONMENTAL CONSEQUENCES	48
4.1	Land Use and Visual Resources.....	48
4.1.1	Methodology	48
4.1.2	Proposed Action.....	48
4.1.3	No-Action Alternative.....	49
4.2	Infrastructure.....	49
4.2.1	Methodology	49
4.2.2	Proposed Action.....	50
4.2.3	No-Action Alternative.....	50
4.3	Socioeconomics and Environmental Justice.....	50
4.3.1	Methodology	50
4.3.2	Proposed Action.....	50
4.3.3	No-Action Alternative.....	52
4.4	Cultural Resources.....	52
4.4.1	Methodology	52
4.4.2	Proposed Action.....	53
4.4.3	No-Action Alternative.....	53
4.5	Biological Resources	53
4.5.1	Methodology	53
4.5.2	Proposed Action.....	53
4.5.3	No-Action Alternative.....	54
4.6	Physical Resources.....	54
4.6.1	Methodology	54
4.6.2	Proposed Action.....	55
4.6.3	No-Action Alternative.....	56
4.7	Air Quality	56
4.7.1	Methodology	56
4.7.2	Proposed Action.....	56
4.7.3	No-Action Alternative.....	58
4.8	Hazardous Materials and Waste Management	58
4.8.1	Methodology	58
4.8.2	Proposed Action.....	59
4.8.3	No-Action Alternative.....	61
4.9	Safety	61

4.9.1	Methodology	61
4.9.2	Proposed Action.....	61
4.9.3	No-Action Alternative.....	63
4.10	Noise	63
4.10.1	Methodology	63
4.10.2	Proposed Action.....	63
4.10.3	No-Action Alternative.....	66
5.0	CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	67
5.1	Cumulative Effects.....	67
5.1.1	Past, Present, and Reasonably Foreseeable Actions.....	67
5.1.2	Cumulative Effects Analysis	68
5.2	Irreversible and Irretrievable Commitment of Resources.....	69
6.0	REFERENCES	70
7.0	LIST OF PREPARERS.....	76
APPENDIX A 27 FW WING INFRASTRUCTURE DEVELOPMENT OUTLOOK		
APPENDIX B PUBLIC AND AGENCY COORDINATION		
APPENDIX C FEDERAL AND STATE LISTED AND CANDIDATE PLANT AND ANIMAL SPECIES AND SPECIES OF CONCERN		

FIGURES

1-1	Cannon AFB and Location of Melrose Air Force Range	3
2-1	Cannon WINDO Projects.....	9
3-1	Future Land Use Map, Cannon AFB.....	17
3-2	Constraints to Development for the Cannon WINDO Projects	44

TABLES

ES-1	Summary of Environmental Impacts	3
1-1	List of Proposed WINDO Infrastructure Improvement Projects	4
2-1	Planning for WINDO Infrastructure Improvement Projects	7
2-2	Short-Range WINDO Construction Projects at Cannon AFB, FY 04-07	8
2-3	Short-Range WINDO Demolition Projects at Cannon AFB, FY 04-07	10
2-4	Long-Range WINDO Construction Projects at Cannon AFB, FY 08-11	10
2-5	Long-Range WINDO Demolition Projects at Cannon AFB, FY 08-11	11
2-6	Short-Range WINDO Construction Projects at MAFR, FY 04-07	12
2-7	Short-Range WINDO Demolition Projects at MAFR, FY 04-07	12
2-8	Environmental Related Permitting.....	14
2-9	Summary of Potential Environmental Consequences	15
3-1	2000 Population and Environmental Justice Data.....	21
3-2	Architectural Resources Proposed for Demolition or Alteration, Cold War Era or Earlier.....	22
3-3	Special-Status Species in Curry and Roosevelt Counties, New Mexico.....	26
3-4	Soil Map Units at Proposed Construction Sites.....	30
3-5	Soil Hazards and Limitations Related to Facility Construction	31
3-6	New Mexico and Federal Ambient Air Quality Standards.....	33
3-7	Baseline Emissions at Cannon AFB, Calendar Year 2002.....	36
3-8	Air Emissions Inventory Curry and Roosevelt Counties, New Mexico Calendar Year 1999	37
3-9	Storage Tanks in the ROI	39
3-10	Land Use Compatibility for Noise Zones.....	45
3-11	Typical A-Weighted Sound Levels.....	46
4-1	Land Use Compatibility for Short Range Projects at Cannon AFB.....	48
4-2	Land Use Compatibility for Long Range Projects at Cannon AFB.....	49
4-3	Land Use Compatibility for Short Range Projects at MAFR.....	49
4-4	Cost Estimates for Cannon WINDO Projects (\$ thousands).....	51
4-5	Construction Emissions – Proposed Action.....	57
4-6	Cubic Yards of Solid Waste Expected from Demolition	60
4-7	APZ Compatibility with the Proposed Action, Short Range Projects at Cannon AFB	62
4-8	APZ Compatibility With the Proposed Action, Long Range Projects at Cannon AFB.....	62
4-9	APZ Compatibility With the Proposed Action, Short Range Projects at MAFR	63
4-10	Construction-Equipment Noise Ranges	64
4-11	Short-Range WINDO Construction Projects at Cannon AFB, FY 04-07	65
4-12	Long-Range WINDO Construction Projects at Cannon AFB, FY 08-11	65
4-13	Short-Range WINDO Construction Projects at MAFR, FY 04-07	66

EXECUTIVE SUMMARY

This Environmental Assessment (EA) analyzes the potential environmental consequences of the proposal to implement the Wing Infrastructure Development Outlook (WINDO) for Cannon Air Force Base (AFB). The WINDO identifies engineering projects proposed to improve the infrastructure of Cannon AFB.

The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) and its implementing regulations. The Draft EA was issued for public and agency review and comment. Comments on the Draft EA have been incorporated into this Final EA. These comments, in addition to the analyses presented in this document, will guide the decision regarding the Cannon WINDO proposal.

PURPOSE AND NEED

The infrastructure improvements identified in Cannon AFB's WINDO will make infrastructure changes necessary to support the Cannon AFB mission. The development vision for Cannon AFB is to maintain, revitalize, and expand facilities to support 21st century United States Air Force (Air Force) missions which play a predominant role in protecting and preserving the national interests of the United States of America. This vision responds to current needs and anticipated future Air Force requirements and initiatives. Specific infrastructure goals are: 1) plan for growth; 2) ensure total execution of resource stewardship responsibilities; 3) promote land use and airspace compatibility; and 4) enhance quality of life. Cannon AFB needs to meet these goals to support the current and future missions of the 27th Fighter Wing (27 FW). Each WINDO project supports one or more of these infrastructure goals.

The primary mission of the 27 FW at Cannon AFB is to maintain an F-16 "Fighting Falcon" fighter wing capable of day and night combat operation for warfighting commanders worldwide at any time. The infrastructure improvements identified in the WINDO and addressed in this EA would provide the quality facilities needed for supporting the 27 FW mission.

PROPOSED ACTION

The Air Force is proposing to implement its WINDO for Cannon AFB. The plan includes infrastructure improvement projects the Wing Commander has identified as needed for the 27 FW to achieve its current and future missions. These projects would occur at Cannon AFB and nearby Melrose Air Force Range (MAFR). Some of the proposed construction projects require associated demolition of old structures and facilities. Specific Cannon AFB projects analyzed in this EA are:

- Demolition of Abandoned Taxiway
- Construction of Entomology Shop
- Construction of Aerospace Ground Equipment Complex
- Construction of Dining Hall/ Airman's Center

- Construction of Communications Facility
- Construction of Base Library/Education Center
- Construction of Fitness Center
- Construction of Transportation Complex
- Construction of Civil Engineering Pavements and Equipment Shop
- Construction of Lodging Office/Distinguished Visitor Suites
- Construction of Raw Water Distribution System
- Construction of Fill Stands

Specific MAFR projects analyzed in this EA are:

- Construction of Range Control Building at MAFR
- Renovation of Fire Station 3 at MAFR
- Construction of Range Control Tower at MAFR

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, some or all of the proposed construction and demolition projects would not be implemented. Selection of the No-Action Alternative would result in continued use of existing facilities. Cannon AFB and the 27 FW would not adequately meet future mission requirements or changes due to deteriorating facilities.

ENVIRONMENTAL CONSEQUENCES

NEPA requires focused analyses on resource areas affected by the Proposed Action or the alternatives. Several environmental resources were analyzed in this EA. These resources and their potential environmental impact are summarized in Table ES-1.

Table ES-1. Summary of Environmental Impacts

<i>Resources</i>	<i>Proposed Action</i>	<i>No Action</i>
Land Use	Proposed construction projects compatible with base planning; no impact expected	No change to land use; no impact expected
Infrastructure	Infrastructure improved with new buildings; no adverse impact expected	Infrastructure remains the same; buildings continue to deteriorate
Socioeconomics / Environmental Justice	No long term change in base employment or expenditures; no change in minority population; no impact expected	No change in base employment or expenditures; no change in minority population; no impact expected
Cultural Resources	No cultural or historic resources affected by action; no impact expected	Cultural resources remain the same; no impact expected
<i>Resources</i>	<i>Proposed Action</i>	<i>No Action</i>
Biological Resources	Previously disturbed habitats affected; native vegetation to be used for landscaping; no impact expected	Biological resources would remain the same; no impact expected
Physical Resources	New Mexico Environment Department (NMED) General Permit for Stormwater Discharges, a site-specific Stormwater Pollution Prevention and Erosion and Sediment Control Plan would be developed for each construction project; no impact expected	Physical resources would remain the same; no impact expected
Air Quality	Combustion engines and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality	Air quality would remain the same; no impact expected
Hazardous Materials and Waste Management	New aboveground storage tanks (ASTs) will need to be registered with the State of New Mexico. Generation of appreciable amount of waste consistent with normal base activity; no impact expected	Hazardous materials and waste management would remain the same; no impact expected
Safety	Construction projects located outside of explosive safety areas and Accident Potential Zones (APZs); no impact expected	Safety would remain the same; no impact expected
Noise	Construction would not create excessive noise; new and improved facilities compatible with noise contours	Noise would remain the same; no impact expected

1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force) proposes implementation of its Wing Infrastructure Development Outlook (WINDO) for Cannon Air Force Base (AFB), New Mexico. The WINDO is a plan designed identifying construction projects proposed for improving the physical infrastructure of Cannon AFB and Melrose Air Force Range (MAFR). This Environmental Assessment (EA) analyzes the potential environmental consequences associated with the Proposed Action and No-Action Alternative. The Proposed Action would involve implementing the infrastructure improvement projects identified by the WINDO; under the No-Action Alternative certain infrastructure improvements would not be performed.

This EA addresses the Proposed Action and the No-Action Alternative in accordance with the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR 989, et seq., *Environmental Impact Analysis Process* (formerly known as Air Force Instruction [AFI] 32-7061).

1.2 BACKGROUND

As an active military installation, Cannon AFB requires new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repair. The WINDO presents the upgrades and improvements at Cannon AFB required for the Wing Commander's vision of facilities necessary for the Cannon AFB mission (Appendix A). The goal of the WINDO is to document the projects needed over the next several years, provide an environmental analysis of these projects, and be prepared to implement the appropriate facility improvements as funds become available. The WINDO benefits Cannon AFB through:

- Coordinating land use planning and infrastructure projects;
- Expediting project execution by using early planning;
- Streamlining the NEPA review process for defined infrastructure projects;
- Providing cost savings through a comprehensive NEPA analysis;
- Maintaining a current baseline for future analysis;
- Supporting tiering of environmental analysis and application of categorical exclusions;
- Meeting legal requirements and resource protection responsibilities.

The WINDO links the base's General Plan to individual funding programs such as military construction (MILCON); Sustainment, Restoration and Modernization by Contract (SRMC), and non appropriated funding (NAF). Cannon AFB will undergo changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances. This WINDO EA can be used as a baseline for future environmental analysis of such mission and training changes.

The WINDO EA provides the Wing Commander and Air Combat Command (ACC) with an agreement for Cannon AFB infrastructure improvements and a completed environmental analysis helping execute the plan. The focus of the WINDO EA is the ongoing need for infrastructure upgrades and improvements at Cannon AFB and MAFR.

1.2.1 Cannon Air Force Base

Cannon AFB is located seven miles west of Clovis, New Mexico, and 17 miles west of the Texas-New Mexico border (Figure 1-1). The base encompasses approximately 3,500 acres. The site has been in use by the military as Clovis Army Airfield since 1943, when World War II aircrews began training for an air-to-ground mission. The base was inactivated in 1947 and reactivated in 1951 as Clovis AFB, a Tactical Air Command base. It was renamed Cannon AFB in 1957, in honor of the late General John K. Cannon, a former commander of Tactical Air Command. Throughout the years, the base has hosted numerous types of aircraft, such as the B-17, B-24, and B-29, and fighters such as the F-86, F-100, F-111, EF-111, and F-16. Currently, the 27th Fighter Wing (27 FW) F-16 pilots train for their dual air-to-air and air-to-ground mission in Cannon AFB-managed airspace and at MAFR.

1.2.2 Melrose Air Force Range

MAFR is the primary air-to-ground training range used by the 27 FW. It is 32 miles west of Cannon AFB and currently occupies 66,033 acres (Figure 1-1). MAFR is on relatively flat land composed of mixed-grass prairie and is bounded on two sides by a 200-foot tall mesa. Approximately 8,800 acres are an exclusive-use target area and 57,233 acres are a buffer area used for agriculture. Agricultural lands are leased to local farmers and ranchers under varying use restrictions. The Base Civil Engineer Squadron manages the leased land, while the exclusive-use area is managed by the 27 Operations Support Squadron.

The Air Force, the New Mexico Air National Guard, as well as the Navy and Marine Corps, have used MAFR for bombing and gunnery practice since the Korean War. In 1952, the Air Force obtained 7,771 acres near Melrose, New Mexico. The land served as a bombing range for F-86 aircraft stationed at Clovis AFB (now Cannon AFB). Later, additional land was acquired as Air Force-owned real property through the Military Construction Authorization Act of 1967 (Public Law [P.L.] 89-568). The WINDO does not include any land expansion of MAFR nor any changes in the training airspace managed by Cannon AFB.

1.2.3 Cannon WINDO EA

The Proposed Action consists of the infrastructure improvements projects listed in Table 1-1. These construction and demolition projects are located on Cannon AFB or MAFR. The project number is an Air Force assigned number used for accounting purposes. In some cases the project includes demolition of existing structures prior to construction of the new facility at the same site. The construction and demolition actions are described in Chapter 2.0.

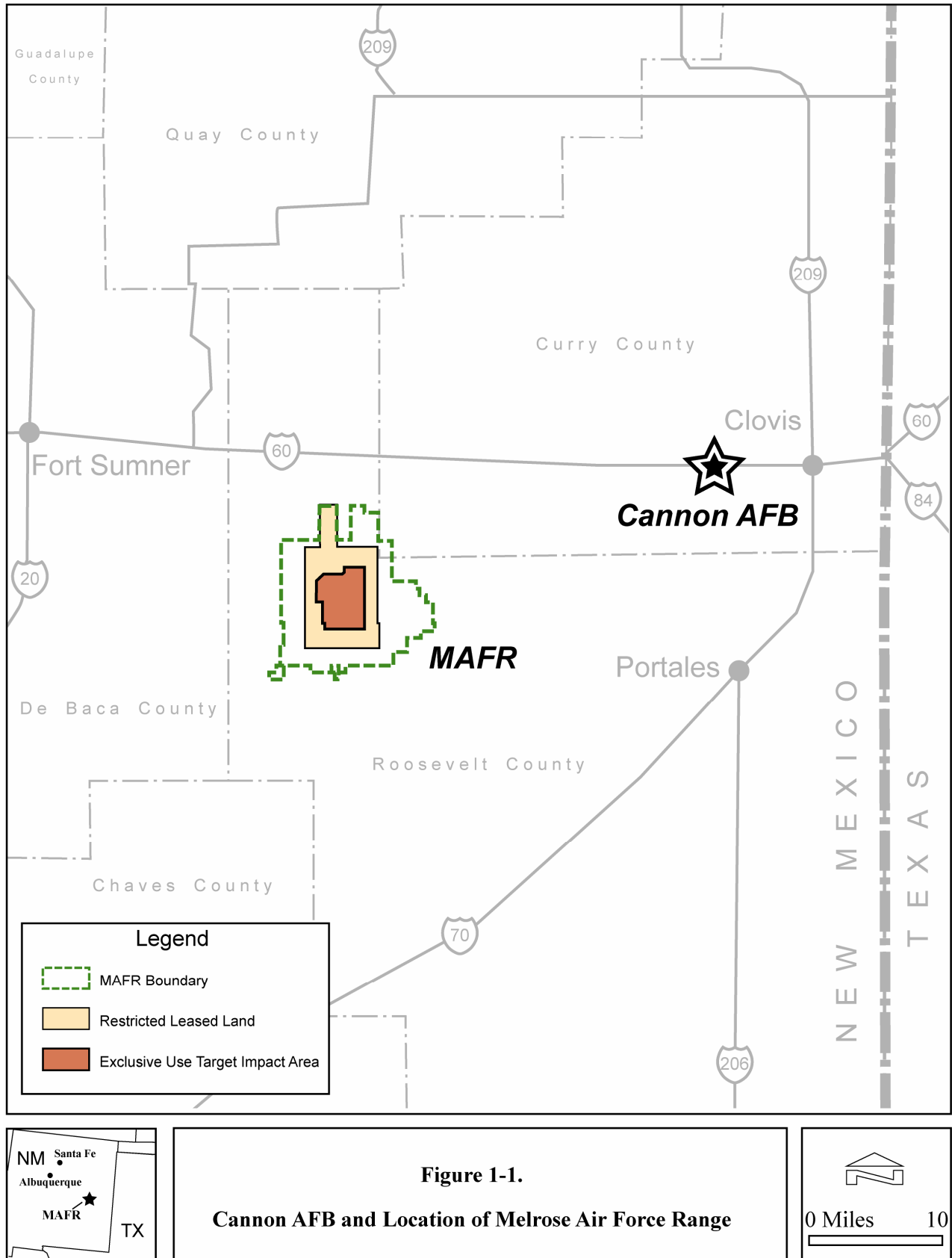


Table 1-1. List of Proposed WINDO Infrastructure Improvement Projects

<i>Project Number</i>	<i>FY</i>	<i>Infrastructure Improvement Project</i>	<i>Location</i>
030293	04	Demolition of Abandoned Taxiway	Cannon AFB
020131	05	Construction of Range Control Building	MAFR
980008	05	Renovation of Fire Station 3	MAFR
030121	04	Construction of Range Control Tower	MAFR
030145	06	Construction of Entomology Shop, B212	Cannon AFB
993002	06	Construction of Aerospace Ground Equipment (AGE) Complex	Cannon AFB
053002	09	Construction of Dining Hall/ Airmen's Center	Cannon AFB
063002	09	Construction of Communications Facility	Cannon AFB
043001	09	Construction of Base Library/Education Center	Cannon AFB
053003	10	Construction of Fitness Center	Cannon AFB
033002	10	Construction of Transportation Complex	Cannon AFB
033003	11	Construction of Civil Engineering (CE) Pavements and Equipment Shop	Cannon AFB
063003	10	Construction of Lodging Office/Distinguished Visitor (DV) Suites	Cannon AFB
939057	05	Construction of Raw Water Distribution System	Cannon AFB
053001	06	Construction of Fill Stands	Cannon AFB

1.3 PURPOSE AND NEED

The purpose of the infrastructure improvements identified in Cannon AFB's WINDO are infrastructure changes necessary for supporting the Cannon AFB mission. The development vision for Cannon AFB is to maintain, revitalize, and expand facilities supporting 21st century Air Force missions which play a predominant role in protecting and preserving the national interests of the United States of America. This vision responds to current needs and anticipated future Air Force requirements and initiatives. Specific infrastructure goals are: 1) plan for growth; 2) ensure total execution of resource stewardship responsibilities; 3) promote land use and airspace compatibility; and 4) enhance quality of life. Cannon AFB needs to meet these goals to support the current and future missions of the 27 FW.

The current and anticipated future mission of the 27 FW at Cannon AFB is developing and maintaining a fighter wing capable of day, night, and all-weather combat missions worldwide. The infrastructure improvements identified in the WINDO and addressed in this EA would provide the quality facilities needed for supporting the 27 FW mission.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Air Force proposes implementation of its WINDO for Cannon AFB. This plan incorporates several infrastructure improvement projects the Wing Commander has identified for the 27 FW to achieve its current and future missions.

2.1.1 Planning Approach and Criteria

Cannon AFB has reviewed its existing facilities, infrastructure, land use, and constraints development and compared those to the installation's development vision and goal, future development issues, and long-term investment strategies. Cannon AFB's current facilities and infrastructure generally meet mission needs, although specific infrastructure and facilities are deteriorating. The focus of the WINDO plan is to upgrade the quality of existing facilities through either renovation or replacement. Project planners considered four development goals:

Goal 1: Plan for growth in mission requirements.

Goal 2: Ensure total execution of resource stewardship responsibilities.

Goal 3: Promote land use and airspace compatibility.

Goal 4: Enhance quality of life.

Table 2-1 applies these goals to the project identified in the WINDO.

Construction and environmental constraints to future development were comprehensively addressed during project planning. Constraints include airfield clearances, Air Installation Compatible Use Zone (AICUZ) noise considerations, quantity-distance (QD) explosive safety zones, and potential historic sites. Environmental constraints involve Installation Restoration Program (IRP) and Solid Waste Management Unit (SWMU) sites, landfills, flood plains, wetlands, and species locations and habitats.

The WINDO list of projects are designed to guide renovation or replacement of Cannon AFB infrastructure and facility improvement over the next five to seven years. These improvements would better support current missions, provide flexibility for new missions and units, and improve quality of life features. Continuing base development is expected. As missions evolve, the base continues to balance mission requirements, support facilities, and personnel needs.

Table 2-1. Planning for WINDO Infrastructure Improvement Projects

<i>Project Number</i>	<i>Infrastructure Improvement Project</i>	<i>Applicable Development Goals</i>
030293	Demolition of Abandoned Taxiway	Plans for growth and promote land use compatibility.
020131	Construction of Range Control Building	Plans for growth and enhances quality of life.
980008	Renovation of Fire Station 3	Ensures resource stewardship and enhances quality of life.
030121	Construction of Range Control Tower	Plans for growth and promotes land use compatibility.
030145	Construction of Entomology Shop, B212	Plans for growth and promotes land use compatibility.
993002	Construction of AGE Complex	Plans for growth; promotes land use compatibility and enhances quality of life.
053002	Construction of Dining Hall/Airmen's Center	Plans for growth and enhances quality of life.
063002	Construction of Communications Facility	Ensures execution of resource stewardship and promotes airspace compatibility.
043001	Construction of Base Library/Education Center	Plans for growth and enhances quality of life.
053003	Construction of Fitness Center	Plans for growth and enhances quality of life.
033002	Construction of Transportation Complex	Plans for growth and promotes land use compatibility.
033003	Construction of CE Pavements and Equipment Shop	Plans for growth and promotes land use compatibility.
063003	Construction of Lodging Office/DV Suites	Plans for growth and enhances quality of life.
939057	Construction of Raw Wastewater Storage Basin	Ensures execution of resource stewardship and promotes land use compatibility.
053001	Construction of Fill Stands	Plans for growth and promote land use compatibility.

The projects included in the Cannon AFB WINDO analyzed in this EA have been identified according to short-range or long-range components. The short-range projects would provide immediate benefit for Cannon AFB. The long-range components and requirements for infrastructure upgrades and plans for growth support the vision and goals of the installation's overall development. The short-range and long-range projects and their direct, indirect, and cumulative impacts are described and analyzed in this EA. This EA addresses potential environmental consequences associated with implementing both the short-range and long-range facilities of the WINDO at Cannon AFB. This EA describes the environmental consequences of ongoing and proposed operations and projects and will serve as a baseline document for future Cannon AFB WINDO plans.

2.1.1.1 CANNON AIR FORCE BASE

Short-range WINDO projects are those scheduled for the next one to four years (i.e., Fiscal Year [FY] 04 to FY 07). These projects are summarized in Table 2-2. As a component of constructing some of these facilities, existing facilities which are obsolete or deteriorated would be demolished. Any hazardous material, such as asbestos and lead-based paint, would be removed from these buildings prior to demolition. Short-range demolition projects are summarized in Table 2-3. Except for the taxiway, all other demolition projects are associated with construction projects. See Figure 2-1 for the location of all Cannon AFB WINDO construction and demolition projects.

Table 2-2. Short-Range WINDO Construction Projects at Cannon AFB, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>	<i>Acres of temporary surface disturbance</i>
939057	05	Raw Wastewater Storage Basin	Repair and upgrade	N/A	N/A	5.0
030145	06	Entomology Shop	Add/alter	4,000	2,000	0.17
993002	06	AGE Complex	New construction	55,000	169,000	6.43
053001	06	Fill Stands	New construction	N/A	75,000	2.15

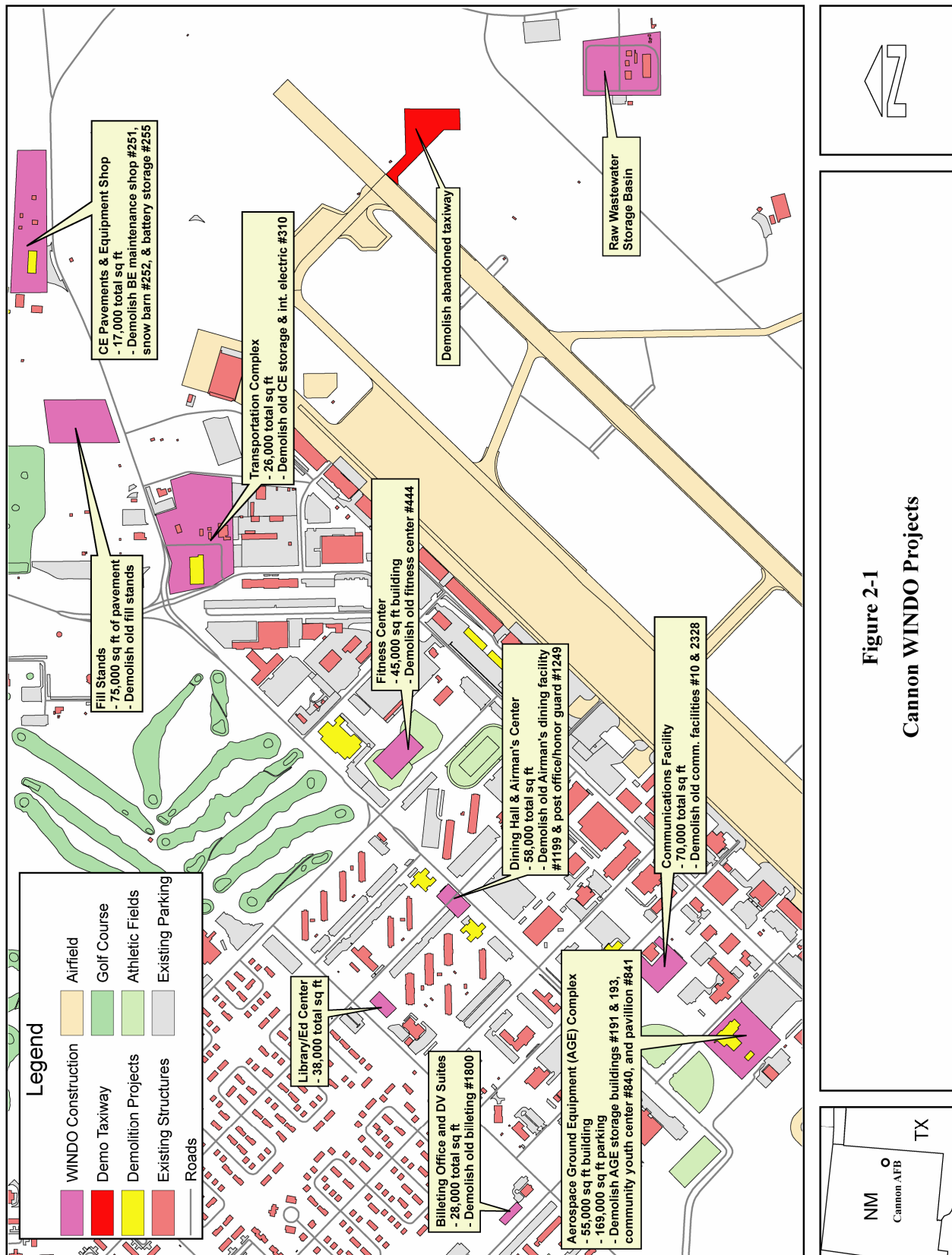


Table 2-3. Short-Range WINDO Demolition Projects at Cannon AFB, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Structure</i>	<i>Building Number</i>	<i>Year Built</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>
030293	04	Abandoned Taxiway	N/A	N/A	N/A	N/A
993002	06	AGE Storage	191	1942	9,677	5,500
993002	06	AGE Storage	193	1942	9,601	0
993002	06	Community/Youth Center	840	1954	17,900	0
993002	06	Pavilion	841	1963	1,812	0
053001	06	Fill Stands	N/A	N/A	N/A	N/A

Long-range WINDO projects are those scheduled to begin in FY 08 and continue through FY 11. These construction projects and associated demolition projects are summarized in Tables 2-4 and 2-5.

Table 2-4. Long-Range WINDO Construction Projects at Cannon AFB, FY 08-11

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>	<i>Acres of temporary surface disturbance</i>
053002	09	Dining Hall and Airman's Center	New construction	28,000	30,000	1.66
063002	09	Communications Facility	New construction	60,000	10,000	2.01
043001	09	Base Library and Education Center	New construction	28,000	10,000	1.09
053003	10	Fitness Center	New construction	45,000	No change	1.29
033002	10	Transportation Complex	New construction	21,000	5,000	2.04
063003	10	Lodging Office and DV Suites	New construction	18,000	10,000	0.80
033003	11	CE Pavements and Equipment Shop	New construction	12,000	5,000	0.63

Table 2-5. Long-Range WINDO Demolition Projects at Cannon AFB, FY 08-11

<i>Project Number</i>	<i>FY</i>	<i>Structure</i>	<i>Building Number</i>	<i>Year Built</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>
053002	09	Airmen Dining Facility	1199	1958	14,747	32,292
053002	09	Post Office and Honor Guard	1249	1958	13,842	0
063002	09	Communications Facility	10	1962	12,292	0
063002	09	Communications Facility	2328	1972	21,926	0
053003	10	Fitness Center	444	1977	47,038	0
063003	10	Billeting	1800	1968	17,900	19,500
033002	10	CE Storage/ Electric Shop	310	1955	20,275	62,000
033003	11	CE Maintenance Shop	251	No date	1,200	0
033003	11	Snow Barn	252	1958	9,600	0
033003	11	Battery Storage	255	1993	300	0

Prior to construction or demolition at any site, a construction laydown area and haul route would be established and coordinated with 27 CES. Each site would be graded, and sediment and erosion would be controlled by the use of standard construction practices. These practices would include the installation of a silt fence, storm drain inlet and tree protection, temporary sediment traps, and diversion dikes within project limits which may be required under the United States Environmental Protection Agency (USEPA) administered stormwater National Pollutant Discharge Elimination System (NPDES) program. Gravel would be placed at the entrance to the construction site to reduce the amount of soil tracked onto the paved roads. Similarly, fugitive dust would be controlled by the use of standard construction practices.

In all cases where construction disturbs the existing vegetation or other ground surface, the contractor would revegetate the areas as approved by the base or restore the surface as directed by the base.

2.1.1.2 MELROSE AIR FORCE RANGE

All WINDO projects at MAFR are scheduled for the next one to three years. Table 2-6 lists the three construction projects and Table 2-7 presents the two associated demolition projects. Just as with Cannon AFB construction and demolition, standard construction practices would be applied to protect natural and physical resources potentially affected by the facility

improvements. All construction would occur within the MAFR compound and on less than 0.2 acres of land.

Table 2-6. Short-Range WINDO Construction Projects at MAFR, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>	<i>Acres of temporary surface disturbance</i>
030121	04	Range Control Tower	New construction	200	No change	0.01
020131	05	Range Control Building	New construction	5,000	No change	0.14
980008	05	Fire Station 3	Expansion	2,000	No change	0.06

Table 2-7. Short-Range WINDO Demolition Projects at MAFR, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Structure</i>	<i>Building Number</i>	<i>Year Built</i>	<i>Building, square feet</i>	<i>Parking, square feet</i>
030121	04	Range Control Tower	3121	1962	5,017	No change
020131	05	Range Control Building	3122	1962	84	No change

2.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, specific construction or demolition projects would not be implemented. Selection of the No-Action Alternative would result in continued use of existing facilities. Without implementation of the Proposed Action, Cannon AFB and the 27 FW would not adequately meet future mission requirements or changes due to deteriorating facilities and would not meet its WINDO development goals.

- Future growth would be hampered.
- Some resource stewardship responsibilities would not be realized.
- Land use compatibilities and the functionality of the base could decrease.
- Quality of life for base personnel would decrease and the aging facilities would continue to deteriorate.

2.3 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The environmental impact analysis process reviews all information pertinent to the Proposed Action and No-Action Alternative and provides a full and fair discussion of potential consequences to the natural and human environment resulting from implementing the WINDO.

The environmental impact analysis process includes involvement with the public and with agencies to identify and focus issues for analysis.

As the Proposed Action would involve new construction and demolition, the following resources are analyzed in this EA: land use, infrastructure, socioeconomics and environmental justice, cultural resources, biological resources, physical resources, air quality, hazardous materials and waste management, safety, and noise. Chapter 3.0 describes the affected environment for these resources and Chapter 4.0 addresses the potential environmental consequences of implementing either the Proposed Action or the No-Action Alternative. A comparison of the environmental consequences is presented at the end of this chapter. The effects of the Proposed Action on airspace and range management were not included for detailed consideration in this EA as there are no proposed changes in airspace, in the number of aircraft or sorties, or in the use of munitions at MAFR.

2.3.1 Agency Coordination

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a proposed action. Agency consultations were undertaken with regard to biological and cultural resources, primarily for compliance with the Endangered Species Act (ESA) and with the National Historic Preservation Act (NHPA). See Appendix B for a list of IICEP agencies and general distribution.

For recent projects, the Air Force has conducted interagency and intergovernmental coordination to identify sensitive environmental resources. The communications from these agencies have been incorporated in this EA. These communications have helped focus the environmental resources for evaluation.

The Air Force prepared and published a newspaper advertisement announcing the availability of the Draft EA for public and agency review to facilitate public involvement in this project. This advertisement was published in the *Mach Meter*, *Portales News Tribune*, and the *Clovis News Journal*.

2.3.2 Regulatory Compliance

This EA has been prepared in accordance with NEPA of 1969 (42 USC 4321-4347), CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR §§ 1500-1508), and AFI 32-7061, *Environmental Impact Analysis Process* (32 CFR 989, et seq.). The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. If the analyses presented in this EA indicates implementation of the Proposed Action would not have significant environmental impacts, then a Finding of No Significant Impact (FONSI) could be issued.

The analysis of environmental resource areas considered all applicable federal, state, and local regulations in Chapters 3.0 and 4.0 of this document. Certain areas of federal legislation have

been given particular consideration, including the ESA; the Clean Air Act (CAA) amendments of 1990; the NHPA; the Clean Water Act, and EO 11990, *Protection of Wetlands*. No endangered species, wetlands, or National Historic Registry impacts are anticipated as a result of implementing the Proposed Action facility improvements. Construction practices described in Section 2.1.1.1 are designed to protect air and water resources.

Implementation of the Proposed Action could involve the need for concurrence from regulatory agencies. Compliance with the ESA involves communication with the Department of the Interior (delegated to the United States Fish and Wildlife Service [USFWS]) in cases where a federal action could affect listed, threatened or endangered species, species proposed for listing, or species which are candidates for listing. A letter was sent to the appropriate USFWS agencies and their state counterparts informing them of the Proposed Action and requesting data regarding applicable protected species. Appendix C includes a list of protected species provided by interested agencies. Since no adverse effects are anticipated, further consultation is not anticipated.

The preservation of cultural resources falls under the purview of State Historic Preservation Office (SHPO), as mandated by the NHPA and its implementing regulations. A letter was sent to the New Mexico Office of Cultural Affairs informing them of the Proposed Action and a Draft EA was provided.

2.3.3 Permit Requirements

This EA has been prepared in compliance with NEPA; other federal statutes, such as the CAA and the Clean Water Act; EOs; and applicable state statutes and regulations. A list of Cannon AFB permits was compiled and reviewed during the EA process. Table 2-8 summarizes these applicable federal, state, and local permits and the potential for change to the permits due to the Proposed Action. Management actions and procedures would need to be reviewed, coordinated and/or updated to insure Air Force compliance with applicable instructions, guidance, and directives. No new permits are expected to be required to implement the WINDO.

Table 2-8. Environmental Related Permitting

<i>Permit</i>	<i>Resource</i>	<i>Proposed Action</i>
Synthetic Minor Permit	Air	No change to existing permit expected
Cannon AFB NPDES Storm Water	Storm Water	The Stormwater Pollution Prevention Plan would need to be reviewed for each project.
Cannon AFB Non Discharge (Sludge Disposal)	Waste Water	No change to existing permit expected
Cannon AFB Hazardous Waste Permit	Hazardous Waste	No change to existing permit expected
Aboveground Storage Tank (AST) Registration Certification	Hazardous Materials	New ASTs will require registration with the State of New Mexico.

2.4 COMPARISON OF ALTERNATIVES

Table 2-9 summarizes the potential environmental consequences of the Proposed Action and No-Action Alternative, based on the detailed impact analyses presented in Chapter 4.

Table 2-9. Summary of Potential Environmental Consequences

<i>Resources</i>	<i>Proposed Action</i>	<i>No Action</i>
Land Use	Proposed construction projects compatible with base planning; no impact expected	No change to land use; no impact expected
Infrastructure	Infrastructure improved with new buildings; no adverse impact expected	Infrastructure remains the same; buildings continue to deteriorate
Socioeconomics / Environmental Justice	No long term change in base employment or expenditures; no change in minority population; no impact expected	No change in base employment or expenditures; no change in minority population; no impact expected
Cultural Resources	No cultural or historic resources affected by action; no impact expected.	Cultural resources remain the same; no impact expected.
Biological Resources	Previously disturbed habitats affected; native vegetation to be used for landscaping; no impact expected	Biological resources would remain the same; no impact expected
Physical Resources	The site-specific Stormwater Pollution Prevention Plan would be reviewed for each construction project. Only those projects, 1-acre or more, would need to have a Stormwater Pollution Prevention Plan developed; no impact expected	Physical resources would remain the same; no impact expected
Air Quality	Combustion engines and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality	Air quality would remain the same; no impact expected
Hazardous Materials and Waste Management	Generation of appreciable amount of waste consistent with normal base activity; no impact expected	Hazardous materials and waste management would remain the same; no impact expected
Safety	Construction projects located outside of explosive safety areas and Accident Potential Zones (APZs); no impact expected	Safety would remain the same; no impact expected
Noise	Construction would not create excessive noise; new and improved facilities compatible with noise contours	Noise would remain the same; no impact expected

3.0 AFFECTED ENVIRONMENT

This chapter describes the affected environment at and around Cannon AFB. The operational characteristics of the Proposed Action (Chapter 2.0) were reviewed and the following resources were identified as possibly affected: land use, infrastructure, socioeconomics and environmental justice, cultural resources, biological resources, physical resources, air quality, hazardous materials and waste, safety management, and noise. The existing environmental conditions within the expected geographic extent of potential impacts, known as the region of influence (ROI), are addressed for each environmental resource in this chapter.

3.1 LAND USE AND VISUAL RESOURCES

Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, airfield, recreational, and other developed areas. Land use is regulated by management plans, policies, and regulations determining the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

Visual resources consist of the natural elements (e.g., vegetation, waterbodies, mountains) and the manmade structures which typically make up the viewing environment. Visual resources are reviewed to determine the compatibility of construction projects within a surrounding environment.

The ROI for land use and visual resources consists of all the lands of Cannon AFB and MAFR.

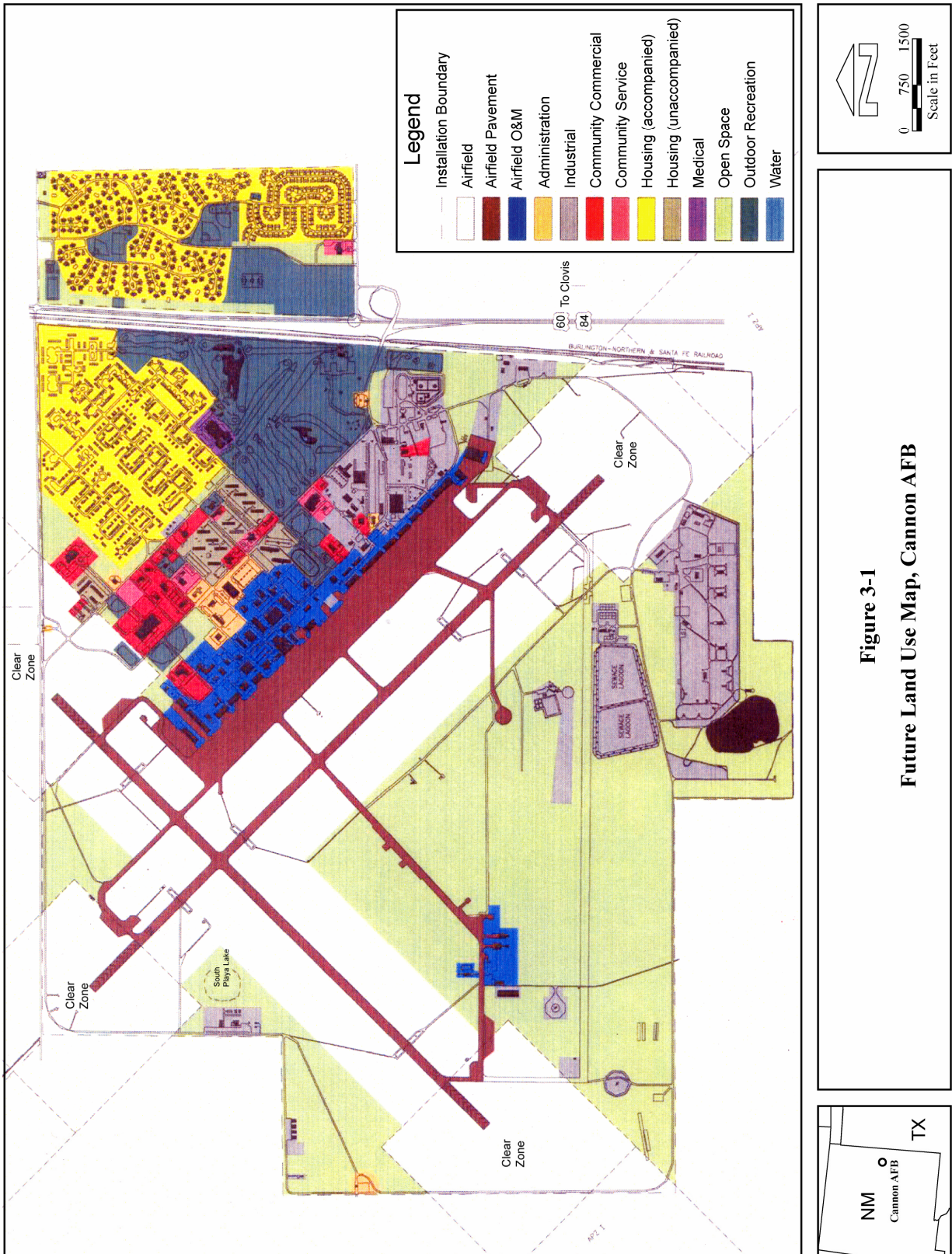
3.1.1 Land Use

Cannon AFB is 3,500 acres and MAFR is 66,033 acres. The base and range have been used for military activities since 1943. Figure 3-1 presents the general plan and future land use map of Cannon AFB. A comparison of the future land use with Section 3.9, Safety, and 3.10, Noise, demonstrates Cannon AFB facilities are planned for future locations to be consistent with the safety and noise parameters of an active military airfield.

Land uses within the base are grouped for their functionality. These groupings are shown on Figure 3-1. In general, housing is located in the northern portion of the base; the airfield in the middle; and open space south of the flightline.

Cannon AFB is surrounded by agricultural, commercial, and residential land. There is virtually no off-base encroachment from the eastern, southern, or western agricultural land contiguous to the base. However, there is residential and commercial development along United States (U.S.) Highway 60-84 to the north of the base (Air Force 2002a). The city of Clovis, the closest community, lies about eight miles to the east.

MAFR is an active military range with target areas and buffer zones within the range. Buffer zones are used for agriculture, primarily grazing. Outside the range boundary, lands are



generally used for cattle grazing and production of wheat, grain sorghum, corn, cotton, alfalfa, peanuts, and potatoes.

3.1.2 Visual

Cannon AFB buildings generally do not exceed two to three stories in keeping with the base and surrounding viewshed. Base architecture is comprised primarily of southwestern style buildings with earth tone coloration. Landscaping is designed to match the building themes with use of native plant species. New or replacement structures would be designed and colored to match the existing southwestern architectural theme.

3.2 INFRASTRUCTURE

The infrastructure elements at Cannon AFB include transportation and utility systems which service all areas of the base. Transportation refers to roadway and street systems. Utilities include electrical distribution, water, wastewater and natural gas systems.

The ROI for this resource consists of Cannon AFB and MAFR.

3.2.1 Transportation

Cannon AFB is situated in Curry County and is bounded along its northern perimeter by U.S. Highway 60/84, which travels east-west and provides direct access to the city of Clovis. To access MAFR, personnel use Highway 60/84 to Melrose, New Mexico, then turn south on Highway 267 (10 miles), then turn west on Sundale Valley Road. U.S. Highway 70 intersects U.S. Highway 60/84 in Clovis and travels south to the City of Portales in neighboring Roosevelt County. A handful of state and county roads, including State Routes 311 and 467, link the base to the surrounding region. The nearest interstate (I-40) is about 50 miles north of Cannon AFB. I-40 traverses the state east-west through Albuquerque.

There are no fixed route public transit lines servicing Cannon AFB, MAFR or the City of Clovis. Clovis Area Transit System provides curb-to-curb public transportation services on a reservation, demand-response basis. During exercises and air shows, Cannon AFB operates a set-route shuttle service with two to three buses. The closest commercial airports are Amarillo International Airport (105 miles), Lubbock International Airport (107 miles), and Albuquerque International Sunport (217 miles). Rail services are provided by Burlington Northern Santa Fe.

3.2.2 Electrical Distribution

The electrical power supplying Cannon AFB and MAFR is purchased from Xcel Energy. The power to the base is delivered to a 25 megawatt substation location within the base by two high voltage lines converging at the base perimeter. Demand is currently at 58 percent of capacity.

3.2.3 Water and Wastewater System

There are seven potable water wells on Cannon AFB supplying water. Melrose also uses water wells for potable and non-potable use. All water and wastewater treatment services are performed by base personnel or contracted operations. Adequate capacity is available to support current demand and potential future mission expansion. The stormwater drainage system is discussed in Section 3.6, Physical Resources.

3.2.4 Natural Gas System

Public Service of New Mexico provides natural gas to Cannon AFB via pipeline to a substation one mile north of the base. From the substation, Cannon AFB owns the pipeline and underground natural gas distribution lines, which range from two to six inches in diameter.

3.3 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Socioeconomic resources for this analysis are characterized in terms of population and employment, with a particular emphasis on minority, low-income and youth populations. Cannon AFB is situated in the high plains of eastern New Mexico, seven miles east of the City of Clovis. MAFR is approximately 32 miles east of Cannon AFB. Socioeconomic activities associated with the base and range are concentrated in the Curry and Roosevelt counties, which comprise the ROI for this analysis.

Cannon AFB

Cannon AFB has a total population of 11,070 persons (Air Force 2002b). There are 3,898 military personnel and appropriated fund civilians, 306 non-appropriated fund civilians, and 191 private employees on base. Military dependents account for the remaining 6,675 persons.

Housing associated with Cannon AFB totals 1,644 units. There are 683 family housing units on base, 611 units across U.S. Highway 60/84 adjacent to the base, and an additional 350 units of government leased housing in Clovis and Portales. Cannon AFB has 12 dormitories accommodating up to 723 unaccompanied enlisted personnel. Temporary quarters provide an additional 99 bed spaces on base.

The total annual economic impact generated by Cannon AFB activities is estimated at \$202 million (Air Force 2003a). Military and civilian payroll total \$122 million. Contracts and purchases of goods and services amount to \$44 million annually.

Curry and Roosevelt Counties

The 2000 Census established the ROI population as 63,062 persons, an increase of approximately 7 percent from the 1990 population of 58,909 (U.S. Census Bureau 2000a). Of the 33 counties in New Mexico, Curry ranked 12th with a 2000 population of 45,044 persons and Roosevelt ranked 22nd with a population of 18,018 persons. Over 50 percent of the ROI population resides in the City of Clovis, which includes Cannon AFB residents. The population of Clovis was 32,667 persons in 2000, 5.5 percent more than the 1990 population of 30,954. The population of Portales, the population center in Roosevelt County, was 11,131 persons in 2000 compared to 10,690 persons in 1990.

According to the 2000 Census, there were 23,405 households in the ROI with an average household size of 2.62 persons. Population density in the state averages 15.0 persons per square mile (U.S. Census Bureau 2000b). Curry County has a higher density, 32.0 persons per square mile; this is due to the population center of Clovis, which is home to over 32,000 people in 22 square miles (1458.9 persons per square mile). The population density of Roosevelt County, in which MAFR is located, is a sparse 7.4 persons per square mile, with a majority of the people concentrated in the city of Portales.

The economy of the two-county region is supported by a combination of government and services employment. The civilian labor force in the ROI amounted to 26,333 persons in 2000 (U.S. Census Bureau 2000a). Over time, employment in the region has experienced increases and decreases. The total number of employed persons was 26,513 in 1980, increasing to 28,945 workers in 1990. Total employment in the ROI decreased to 24,433 workers in 2000. The unemployment rate, following national trends, rose to 7.2 percent in 2000, up from 6.0 percent in the early 1990s. In 2000, Curry County had a per capital personal income of \$20,978 and Roosevelt County had a per capital personal income of \$18,213, compared to the state and national averages of \$21,931 and \$29,469, respectively (U.S. Bureau of Economic Analysis 2003).

3.3.1 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to address environmental and human health conditions in minority and low-income communities. In addition to environmental justice issues are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, which directs federal agencies to identify and assess environmental health and safety risks which may disproportionately affect children.

For purposes of this analysis, minority, low-income and youth populations are defined as follows:

- Minority Population: Persons of Hispanic origin of any race, African Americans, American Indians, Eskimos, Aleuts, Asians, or Pacific Islanders.
- Low-Income Population: Persons living below the poverty level.
- Youth Population: Children under the age of 18 years.

Estimates of these three population categories were developed based on data from the U.S. Bureau of the Census.

As presented in Table 3-1, the incidence of persons and families in the ROI with incomes below the poverty level were slightly higher than state levels (U.S. Census Bureau 2000a). In the ROI during 2000, 20.0 percent of persons and 25.3 percent of children were living below the poverty level, compared to 18.4 percent of persons and 24.7 percent of children in the State of New Mexico as a whole.

Table 3-1. 2000 Population and Environmental Justice Data

<i>Area</i>	<i>Population</i>	MINORITY PERSONS		PERSONS BELOW POVERTY		CHILDREN UNDER 18	
		<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
State of New Mexico	1,819,046	1,005,551	55.3	328,933	18.4	508,574	28.0
Curry County	45,044	18,583	41.3	8,327	19.0	13,561	30.1
Roosevelt County	18,018	6,719	37.3	3,928	22.7	5,060	28.1
Total ROI	63,062	25,302	40.1	12,255	20.0	18,621	29.5

Notes: 1. The U.S. Census calculates percent low-income for individual counties based on total county populations differing slightly from the county populations reported in the first column.
2. Population figures for the each category are from different reporting years as described in the previous section. Therefore, except for minority population, the percentage figures are not based on the total population presented in this table but from the relevant data year.

Source: U.S. Census Bureau 2000a.

Minority persons represent 40.1 percent of the ROI population. Hispanic or Latino persons account for the largest part of the minority population in the ROI, representing 31.2 percent of the ROI population and 77.8 percent of the minority population. By comparison, minority persons represent 55.3 percent of the state population, with Hispanic or Latino persons accounting for 76.1 percent of the state minority population. The youth population, which includes children under the age of 18, accounts for 28.0 percent of the ROI population, compared to 28.0 percent at the state level.

3.4 CULTURAL RESOURCES

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Historic architectural resources include standing buildings and other structures of historic or aesthetic significance. Traditional resources are associated with cultural practices and beliefs of a living community which are rooted in its history and are important in maintaining the continuing cultural identity of the community.

Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources eligible for listing, or listed in, the National Register of Historic Places (NRHP). Historic properties are evaluated for potential adverse impacts from an action, as are significant traditional resources identified by American Indian tribes or other groups. In 1999, the Department of Defense (DoD) promulgated its American Indian and Alaska Native Policy, which emphasize the importance of respecting and consulting with tribal governments on a government-to-government basis. The Policy requires an assessment, through consultation, of the effect of proposed DoD actions having the potential to significantly affect protected tribal

resources, tribal rights, and Indian lands before decisions are made by the services. The ROI for cultural resources consists of Cannon AFB and MAFR.

3.4.1 Archaeological Resources

A number of archaeological resources have been recorded at Cannon AFB and at MAFR, although none are within the proposed project area (personal communication, Chandler 2004). Traditional Native American cultural resources have not been identified in the project area.

3.4.2 Architectural Resources

Of the World War II and Cold War-era architectural resources at Cannon AFB and on MAFR, 18 are in the present project area. The two World War II-era buildings (#191 and 193) are managed under a Programmatic Memorandum of Agreement for temporary World War II structures and are not subject to further mitigation (personal communication, Chandler 2004). No Cold War-era buildings are considered eligible for the NRHP (personal communication, Chandler 2004). Table 3-2 lists buildings from these eras associated with the Proposed Action.

Table 3-2. Architectural Resources Proposed for Demolition or Alteration, Cold War Era or Earlier

<i>Building #</i>	<i>Building Name</i>	<i>Proposed Action</i>	<i>Construction Date</i>	<i>National Register Status</i>
10	Communications Facility	Demolition	1962	Not eligible
186	Fill stand	Demolition	1966	Not eligible
191	AGE storage	Demolition	1942	Not eligible ¹
193	AGE storage	Demolition	1942	Not eligible ¹
211	Hazardous Storage	Demolition	1955	Not eligible
212	Entomology Shop	Add/ Alter	1983	Not eligible
214	Outdoor Recreation	Demolition	1966	Not eligible
252	BE Paving/Grounds	Demolition	1958	Not eligible
310	Storage	Demolition	1955	Not eligible
388	Fill Stand	Demolition	1972	Not eligible
391	Fill Stand	Demolition	1966	Not eligible
444	Fitness Center	Demolition	1977	Not eligible
840	Community/Youth Center	Demolition	1954	Not eligible
841	Old Pavilion	Demolition	1963	Not eligible
1199	Airmen Dining Facility	Demolition	1958	Not eligible
1249	Post Office/Honor Guard	Demolition	1958	Not eligible
2328	Communications Facility	Demolition	1972	Not eligible
1800	Billeting	Demolition	1968	Not eligible

Note: 1. Exempt from further mitigation under a Programmatic Memorandum of Agreement for temporary World War II buildings (personal communication, Chandler 2004).

Source: Personal communication, Chandler 2004.

3.4.3 Traditional Resources

There are no traditional resources at Cannon AFB. Native American Tribes have been notified of environmental analysis for MAFR projects and have explained in written responses that MAFR is not on a location containing important traditional resources.

3.5 BIOLOGICAL RESOURCES

Biological resources are native and exotic organisms, and their habitats, including wetlands. The ROI for biological resources consists of all lands at Cannon AFB and MAFR. Discussion of MAFR will concentrate on lands where the proposed construction would occur (i.e., around the range support facilities).

Natural plant and animal life are typically referred to as vegetation and wildlife, respectively. The existence and preservation of these resources are intrinsically valuable; they provide aesthetic, recreational, and socioeconomic values to human society. This section focuses on plant and animal species or vegetation types which typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute. For purposes of the analysis, biological resources is organized into three major categories: 1) terrestrial communities, including wildlife; 2) wetlands and freshwater aquatic communities; and 3) special-status species.

3.5.1 Terrestrial Communities

Terrestrial communities include those plant and animal species living largely on the land. The composition and structure of plant species within a given area defines ecological communities or habitats. The attributes and quality of available habitats determine the composition, diversity, and abundance of wildlife. Each species has particular habitat requirements and interactions with other species which determine its distribution and abundance. For this reason, an assessment of habitat types and area affected by the Proposed Action and No-Action Alternative can serve as an overriding determinant in the assessment of impacts for wildlife populations.

CANNON AIR FORCE BASE

The lands of Cannon AFB are currently classified as Urban and Cultivated, although historic vegetation was Plains-Mesa Grassland (Dick-Peddie 1993). Four habitat types occur at Cannon AFB: improved/landscaped, semi-improved/mowed grassland, unimproved/disturbed grassland, and riparian/aquatic (U.S. Army Corps of Engineers [USACE] 1996). The riparian/aquatic habitat type is discussed below in Section 3.5.2. The USACE (1996) provided a list of landscape plants at Cannon AFB. Semi-improved/mowed areas generally consist of lawn grasses and weeds, which are kept mowed to facilitate base training and improve appearance. Unimproved/disturbed grasslands are not mowed and include Bermuda grass (*Cynodon dactylon*), windmill grass (*Chloris verticillata*), Johnsongrass (*Sorghum halapense*), silver bluestem (*Bothriochloa saccharoides*), common sunflower (*Helianthus annuus*) and ragweed (*Ambrosia psilotrachya*) (USACE 1996).

Terrestrial wildlife at Cannon AFB generally consists of those species associated with disturbed places or benefit from the presence of humans. Such species include mourning dove (*Zenaida macroura*), great-tailed grackle (*Quiscalus mexicanus*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house mouse (*Mus musculus*), deer mouse (*Peromyscus maniculatus*), and red fox (*Vulpes vulpes*) (USACE 1995; USACE 1996). Ten to 15 pairs of Mississippi kites (*Ictinia mississippiensis*) regularly nest in trees on the base's golf course.

MELROSE AIR FORCE RANGE

MAFR lies within the Plains-Mesa Grassland vegetation zone (Dick-Peddie 1993). Parmenter et al. (1994) further classified the vegetation at MAFR into 10 habitat types. Major habitat types were mixed-species grassland, mesquite-grasslands, sand-hill shrublands, old agricultural fields, and agricultural lands (wheat fields). Minor habitats were swales/playas, ravine (Sheep Canyon), wildlife-habitat restoration sites, abandoned farm/ranch buildings, and orchards/windbreaks.

Mixed-species grassland was the most abundant and widespread habitat on MAFR and it is typical of natural regional vegetation. Blue gramma (*Bouteloua gracilis*) and other gramma grasses (*Bouteloua* spp.) dominated this habitat type. Other important grasses included buffalograss (*Buchloe dactyloides*), dropseed (*Sporobolus* spp.), and tobosa (*Hilaria mutica*) (DeBruin et al. 1995). Scattered shrubs, such as mesquite (*Prosopis glandulosa*), cacti and cholla (*Opuntia* spp.) were also present. Much of the mixed grassland on MAFR is maintained by active removal of mesquite (personal communication, Davis 2004), a shrub which tends to increase in response to livestock grazing and fire suppression (Brown 1994). Grassland species found on MAFR include the six-lined racerunner (*Cnemidophorus sexlineatus*), many-lined skink (*Eumeces multivirgatus*), Great Plains skink (*E. obsoletus*), Plains blackhead snake (*Tattilla nigriceps*), burrowing owl (*Athene cunicularia*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), black-tailed prairie dog (*Cynomys ludovicianus*), and hispid pocket mouse (*Chaetodipus hispidus*) (Parmenter et al. 1994).

Lands in the immediate vicinity of the range support facilities were not surveyed by Parmenter et al. (1994); however, they likely would be classified as semi-improved/mowed areas, surrounded by mixed-species and mesquite grasslands. Species common at the range support facilities were western kingbird (*Tyrannus verticalis*), barn swallow (*Hirundo rustica*), western meadowlark (*Sturnella neglecta*), great-tailed grackle, and Bullock's oriole (*Icterus bullockii*).

3.5.2 Wetlands and Other Waters of the U.S.

Waters of the U.S. include navigable waterways, lakes, rivers, streams, intermittent stream, mudflats, wet meadows, natural ponds, and wetlands. Jurisdictional waters of the U.S. are protected under Sections 401 and 404 of the Clean Water Act and EO 11990, *Protection of Wetlands*. Wetlands are a special category of waters of the U.S., and must meet all criteria defined in the USACE's *Wetlands Delineation Manual* (Environmental Laboratory 1987). Water quality is also under the purview of the New Mexico Water Quality Control Commission

(NMWQCC) (NMWQCC 2002a). All waters of the U.S., including wetlands, have been delineated on Cannon AFB and MAFR (Air Force 1996).

CANNON AIR FORCE BASE

Jurisdictional waters at Cannon AFB include wetlands (4.74 acres), ponds and basins (25.59 acres), and 2,913 linear feet of intermittent streams and drainages (Air Force 1996). The two jurisdictional wetlands are the South Playa Lake (4.56 acres) and a small wetland (0.18 acres) on the golf course. The South Playa Lake is a seasonally flooded wetland located in a natural playa basin. It receives much of its water as run-off from the nearby airfield. The golf course wetland also receives run-off water from the base.

Other waters of the U.S. are the North Playa Lake, one man-made basin near the Ammunition Storage Area which is temporarily flooded, and four ponds on the golf course. The North Playa Lake was historically a natural playa, but it has been modified to receive input from base sewage lagoons.

The USACE conducted a biological survey of the North Playa Lake in 1995 (USACE 1995). Both the North and South Playa lakes attract waterfowl during migration and in winter and provide valuable habitat in an otherwise arid region. Up to 29 species of waterbirds, such as grebes, herons, ducks, geese, shorebirds, and gulls, have been recorded at the North Playa Lake (USACE 1995).

MELROSE AIR FORCE RANGE

Jurisdictional waters on MAFR include 13.71 acres of ponds and impoundments, 6.57 acres of wetlands, and 137,080 linear feet of streams and drainages (Air Force 1996). There are four delineated wetlands, located in three shallow playa basins and one depression, all of which are irregularly and temporarily inundated from surface run-off, but nonetheless can provide quality habitat for various wildlife species, particularly migratory birds.

Two man-made ponds qualify as jurisdictional waters. The original basin of the Mesa Playa was excavated to provide water for livestock. The second pond is a watering impoundment in Sheep Canyon. Both ponds are currently fenced to exclude livestock for the benefit of wildlife habitat.

Cañada del Tule and Sheep Canyon are the primary drainages at MAFR. These ephemeral drainages, in addition to numerous small, intermittent drainages, carry run-off from the large mesa of MAFR.

3.5.3 Threatened and Endangered and Special Status Species

THREATENED AND ENDANGERED SPECIES

The USFWS provided a list of endangered, threatened, and candidate species, and species of concern for Curry and Roosevelt counties. The New Mexico Department of Game and Fish (NMDGF), New Mexico Natural Heritage Program (NMNHP), and New Mexico Rare Plant Technical Council (NMRPTC) web sites provided state listings of species of special concern

(NMRPTC 1999; NMDGF 2003; NMNHP 2003). All special-status species for the counties including both Cannon AFB and MAFR are listed in Table 3-3.

Table 3-3. Special-Status Species in Curry and Roosevelt Counties, New Mexico.

<i>Common Name</i>	<i>Scientific Name</i>	<i>Federal Status</i>	<i>State Status</i>
PLANTS			
Sandhill goosefoot	<i>Chenopodium cycloides</i>	Species Of Concern	
REPTILES			
Sand dune lizard	<i>Sceloporus arenicolus</i>	Candidate	Threatened
BIRDS			
Mountain plover	<i>Charadrius montanus</i>	Species Of Concern	Sensitive
Interior least tern	<i>Sterna antillarum athalassos</i>	Endangered	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Threatened
Peregrine falcon	<i>Falco peregrinus</i>	Species Of Concern	Threatened
Lesser prairie-chicken	<i>Tympanuchus pallidicinctus</i>	Candidate	Sensitive
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Species Of Concern	Sensitive
Western burrowing owl	<i>Athene cunicularia hypugea</i>	Species Of Concern	
Loggerhead shrike	<i>Lanius ludovicianus</i>		Sensitive
Baird's sparrow	<i>Ammodramus bairdii</i>	Species Of Concern	Threatened
MAMMALS			
Least shrew	<i>Cryptotis parva</i>		Threatened
Western red bat	<i>Lasiurus blossevillii</i>	Species Of Concern	Sensitive
Eastern red bat	<i>Lasiurus borealis</i>		Sensitive
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	Species Of Concern	
Western spotted skunk	<i>Spilogale gracilis</i>		Sensitive
Black-footed ferret	<i>Mustela nigripes</i>	Endangered	Endangered (Extinct)
Swift fox	<i>Vulpes velox</i>	Species Of Concern	Sensitive
Ringtail	<i>Bassariscus astutus</i>		Sensitive
Sandhill white-tailed deer	<i>Odocoileus virginianus texana</i>		Sensitive

Sources: NMDGF 2003; NMNHP 2003; Air Force 2004.

The USFWS reported three federally protected species having the potential to occur in Curry and Roosevelt counties, along with three candidate species and eight species of concern. Additionally, several species have a special status in New Mexico, with a number of these not ranked federally.

The black-footed ferret is a federally endangered species. It was historically associated with prairie dogs across the western prairies, but is currently extinct in New Mexico.

The interior least tern, a federally endangered species, breeds at Bitter Lake National Wildlife Refuge, south of the ROI near Roswell. This small breeding colony typically consists of three to seven pairs (NMDGF 2002a). These birds often use playa lakes for foraging and have the potential to occur at playa basins in the ROI. To date, no interior least terns have been observed at Cannon AFB or MAFR (Air Force 1998a).

The threatened bald eagle is not known to nest in Curry or Roosevelt counties. It is a migratory species and is a common winter resident along the Pecos River. One winter roost site occurs north of the ROI at Sumner Lake (Air Force 2001). Within the ROI, only the North Playa Lake contains potential bald eagle habitat, but eagles have not been previously observed there (Air Force 1998a). However, as bald eagles are migratory, they have the potential to occur at the North Playa Lake during fall, winter, or spring.

The sand dune lizard is a candidate for listing under the ESA, and is classified as threatened in New Mexico. It is an inhabitant of shinnery oak (*Quercus havardii*) sand dunes. Its main threat is from sand dune stabilization efforts requiring chemical treatment. Sand hills habitat occurs in the north and northeast parts of MAFR; however, the sand dune lizard was not observed during surveys (Parmenter et al. 1994).

Another candidate for listing is the lesser prairie-chicken. In New Mexico, the lesser prairie-chicken inhabits prairies of sand and little bluestem grasses (*Bouteloua hallii* and *B. scoparium*), mixed with shinnery oak or sand sagebrush (*Artemisia filifolia*) (Giesen 1998). Population declines of prairie-chickens are due to habitat loss, degradation, and drought (Giesen 1998; NMDGF 2002b). There are several state-managed Prairie-Chicken Areas in Roosevelt County (Massey 2001); however, these birds have not been observed at MAFR (Parmenter et al. 1994; Air Force 2003b).

The black-tailed prairie dog has declined drastically across its range in the prairie states. Population declines are attributed to habitat loss and modification, poisoning, and disease (sylvatic plague) (USFWS 2000). It is currently a species of concern. Prairie dogs are abundant at MAFR.

Of the eight species of concern, four have been observed within the ROI. Only the western burrowing owl is a regular resident, while the mountain plover, peregrine falcon, and Baird's sparrow occasionally occur during migration or winter. Historically, burrowing owls and mountain plovers were found in association with prairie dog towns (USFWS 2003a; USFWS 2003b). Burrowing owls use prairie dog burrows for nesting, while both the owl and the plover prefer the barren areas around prairie dog towns. Burrowing owls nest at MAFR and resource

personnel are currently conducting surveys to estimate the breeding population (personal communication, Davis 2004). Despite sufficient prairie dog habitat, mountain plovers do not nest at MAFR. This is largely due to New Mexico being on the edge of the species' breeding range. Several groups of mountain plovers have been observed at MAFR during spring migration (Air Force 2003b).

Although the peregrine falcon was federally delisted in 1999, the State of New Mexico still considers it a threatened species. Cliff nesting habitat does not occur in the ROI. However, peregrines are migratory and could be a rare visitor to Cannon AFB or MAFR. A peregrine falcon was observed at North Playa Lake in spring 1997 (Air Force 1998a).

Baird's sparrows breed in the northern prairies and winter primarily in northern Mexico. They also may winter in New Mexico grasslands (NMDGF 2002a). One Baird's sparrow was observed in mixed grassland in the southeast part of Cannon AFB in spring 1997 (Air Force 1998a). It is likely a rare visitor to the ROI.

SPECIAL STATUS SPECIES

Special-status species are those plant and animal species listed as threatened, endangered, and candidate species, or species of concern by the USFWS, as well as those species with special-status designations by the State of New Mexico. The ESA protects federally listed threatened and endangered plant and animal species. Candidate species are species the USFWS is considering for listing as federal threatened or endangered but for which a proposed rule has not yet been developed. Candidates do not benefit from legal protection under the ESA. In some instances, candidate species may be emergency listed if USFWS determines the species population is at risk due to a potential or imminent impact. The USFWS encourages federal agencies to consider candidate species in their planning process as they may be listed in the future and, more importantly, current actions may prevent future listing.

Species of concern are former Category 2 candidate species where data was inconclusive to support ESA protection at the time of the proposed listing. It is an informal designation, although USFWS recommends tracking of population trends and threats. The NMDGF maintains a list of endangered and threatened fish and wildlife, while the Minerals and Natural Resources Department protects endangered plants. Typically state and federal lists have considerable overlap, but occasionally a state may provide more protection than is required at the federal level. New Mexico also ranks wildlife and plants as "sensitive." These species may be declining, rare, or endemic. State sensitive designations do not provide legal protection but do provide a context for monitoring and evaluation of project effects.

3.6 PHYSICAL RESOURCES

Physical resources include topography, geology, soils, and water, which are all interrelated. Topography characterizes the landscape in the area and provides a description of the physical setting. Geologic resources of an area typically consist of subsurface rock, occasionally visible at the ground surface. The inherent properties of local bedrock affect soil formation, groundwater sources and availability, and terrain. Soils include unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in the natural and human

environment, affecting vegetation growth, water and air quality, and the success of the construction and stability of roads, buildings, and shallow excavations. Water resources address surface water, such as lakes, rivers, and streams, and groundwater describes subsurface hydrologic resources. These resources may have scientific, historical, economic, and recreational value.

Typically, issues relevant to water resources include the quality and quantity of downstream water bodies which may be affected by alternatives considered in the EA, as well as hazards associated with 100-year floodplains delineated in accordance with EO 11988, *Floodplain Management*.

The ROI for physical resources in this EA includes Cannon AFB and MAFR. The descriptions of topography and geology are described in a regional context to depict the setting. The soils and water resource information provided is site-specific, focusing on the properties which would be most likely affected or to have an effect on construction of the facilities planned under the Proposed Action.

3.6.1 Water Resources

Cannon AFB and MAFR are located within the Southern High Plains Major Land Resource Area on the western edge of the Great Plains. The topography, ranging between 4,000 and 4,800 feet in elevation, consists of nearly level to very gently sloping land interspersed with small areas of steep escarpments or undulating terrain including dunes (Soil Conservation Service [SCS] 1980). The region is underlain by nearly horizontal sedimentary rocks which have been covered by alluvial and aeolian deposits (Air Force 2003b). There are no perennial streams in the Southern High Plains, but the gently sloping topography contains playa lakes scattered throughout the region. The playa lakes and intermittent streams contain water during periods of heavy or prolonged precipitation (NMWQCC 2002b). The watershed in which Cannon AFB is located drains towards the Brazos River in Texas; the watershed encompassing MAFR drains towards the Pecos River in New Mexico. However, little or no surface water reaches receiving waters from the High Plains in eastern New Mexico due to the low annual precipitation and high evaporation rates (Air Force 2003b).

There are no major drainageways or perennial streams on Cannon AFB. MAFR is located in the long shallow valleys of the Cañada del Tule and Sheep Canyon. Sheep Canyon carries intermittent flows northeast from the high point on MAFR. High evaporation and infiltration rates prevent these drainages from contributing to surface water flows to the Pecos River (Air Force 2003b). No 100-year floodplains have been delineated on Cannon AFB or MAFR.

Surface water runoff on Cannon AFB is managed through a stormwater system consisting of a combination of swales, inlets, culverts, and pipes currently having adequate capacity to handle flows. Stormwater discharges are managed in compliance with the NPDES requirements for construction activity under a program administered by the USEPA. Cannon AFB has certification under the NPDES General Permit for Stormwater Discharges. The General Permit requires site-specific temporary and permanent stabilization of disturbed areas, and control of erosion and sedimentation through the installation and maintenance of best management

practices (BMPs) and other controls designed to minimize increases in the sediment yield and flow velocity over pre-construction, pre-development conditions.

The Ogallala Aquifer is the principal aquifer system underlying the region and provides the primary source of domestic water. It occurs chiefly in the Ogallala Formation, a thick geologic formation composed of a mixture of clay, silt, sand, and gravel layers, sometimes cemented by calcium carbonate and silica with a caprock of caliche at the top. The thickness of water in the Ogallala Formation ranges from a few feet to more than 525 feet (North Plains Groundwater District 2004).

3.6.2 Soils

In general, the semi-arid climate of the region contributes to the development of thin topsoil with low organic content, underlain at relatively shallow depths by a leached clay-carbonate hardpan or “caliche.” The soils in the location of the proposed construction contain caliche layers, and all have well-developed soil horizons or layers, indicating they formed in place over a long period of time. Table 3-4 provides brief descriptions of each soil map unit in the locations of the facilities included in the Proposed Action.

Table 3-4. Soil Map Units at Proposed Construction Sites

Cannon AFB	Amarose fine sandy loam, 0 to 1 percent slopes and 1 to 3 percent slopes: Very deep, well-drained, moderately permeable soils that formed in calcareous loamy materials.
	Clovis fine sandy loam, 0 to 2 percent slopes and 2 to 5 percent slopes: Very deep, well-drained, moderately permeable soils that formed in medium and moderately fine-textured sediments from quartzite gneiss, schist, sandstone, and limestone.
MAFR	Springer loamy fine sand: Very deep, well-drained, with moderately rapid permeability that formed in aeolian sediments and alluvium.

Source: Natural Resources Conservation Service (NRCS) 1998, 1999, 2004.

Soil physical and chemical characteristics determine their potential for wind and water erosion, and the soil’s suitability for siting buildings, roads, and pipelines, which are important factors to consider when planning for construction and stabilization of disturbed areas. Table 3-5 summarizes the important soil hazards and limitations of each soil type which should be taken into account during site planning.

Table 3-5. Soil Hazards and Limitations Related to Facility Construction

<i>Soil Map Unit</i>	HAZARD RATINGS		LIMITATIONS		
	<i>Water Erosion</i>	<i>Wind Erosion</i>	<i>Roads</i>	<i>Shallow Excavations</i>	<i>Commercial Buildings</i>
Amarose fine sandy loam	Moderate	Moderate	Slight	Slight	Slight
Clovis fine sandy loam	Moderate	Moderate	Moderate: shrink-swell	Slight	Moderate: low strength, shrink-swell
Springer loamy fine sand	Low	Low	Slight	Severe: cutbanks cave	Slight

Source: NRCS 1997.

3.7 AIR QUALITY

This section discusses air quality considerations and conditions in the area around Cannon AFB and MAFR in Curry and Roosevelt counties, New Mexico. It addresses air quality standards and describes current air quality conditions in the region.

3.7.1 Federal and State Air Quality Standards.

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations and were developed for six “criteria” pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), respirable particulate matter less than or equal to 10 micrometers in diameter (PM₁₀), sulfur dioxide (SO₂), and lead (Pb). The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [μg/m³]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Upon achieving attainment, areas are considered to be in maintenance status for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when

there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated similar to areas that are in attainment of the NAAQS.

In 1997, the USEPA promulgated two additional standards: an 8-hour O₃ standard (which will replace the existing 1-hour O₃ standard) and a standard for particulate matter less than or equal to 2.5 micrometers in diameter (PM_{2.5}), which are fine particulates that have not been previously regulated. In addition, the USEPA revised the existing PM₁₀ standard. Attainment designations for the 8-hour O₃ standard were promulgated in April 2004 and are effective as of June 15, 2004. Attainment designations for the PM_{2.5} standard are expected in December 2004. Meanwhile, the USEPA will enforce the existing 1-hour O₃ standard for areas that are still in nonattainment of the standard.

STATE AIR QUALITY STANDARDS

Under the CAA, state and local agencies may establish ambient air quality standards (AAQS) and regulations of their own, provided these are at least as stringent as the federal requirements. For selected criteria pollutants, the State of New Mexico has established its state AAQS, which are somewhat more stringent than the federal standards (New Mexico Department of Environmental Improvement 2002). New Mexico AAQS are more restrictive than federal standards for CO, NO₂, and SO₂. New Mexico does not have state standards for PM₁₀, O₃, and Pb. In addition, New Mexico regulates emissions of total suspended particulates, hydrogen sulfide (H₂S), and total reduced sulfur, three pollutants for which there are no federal standards. A summary of the federal and New Mexico AAQS that apply to the proposed project area is presented in Table 3-6.

State Implementation Plan. For non-attainment regions, the states are required to develop a State Implementation Plan (SIP) designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

PREVENTION OF SIGNIFICANT DETERIORATION

Section 162 of the CAA further established the goal of prevention of significant deterioration (PSD) of air quality in all international parks; national parks which exceeded 6,000 acres; and national wilderness areas and memorial parks which exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (non-mandatory) PSD Class I areas (e.g., a national park or national wilderness

Table 3-6. New Mexico and Federal Ambient Air Quality Standards

Air Pollutant	Averaging Time	New Mexico AAQS	FEDERAL (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	8-hour 1-hour	8.7 ppm 13.1 ppm	9 ppm 35 ppm	--- ---
Nitrogen Dioxide (NO ₂)	AAM 24-hour	0.05 ppm 0.10 ppm	0.053 ppm ---	0.053 ppm ---
Sulfur Dioxide (SO ₂)	AAM 24-hour 3-hour	0.02 ppm 0.10 ppm ---	0.030 ppm 0.14 ppm ---	--- --- 0.50 ppm
Particulate Matter (PM ₁₀)	AAM 24-hr	--- ---	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³
Particulate Matter (PM _{2.5}) (a)	AAM 24-hour	--- ---	15 µg/m ³ 65 µg/m ³	15 µg/m ³ 65 µg/m ³
Total Suspended Particulates (TSP)	AGM 30-day 7-day 24-hr	60 µg/m ³ 90 µg/m ³ 110 µg/m ³ 150 µg/m ³	--- --- --- ---	--- --- --- ---
Hydrogen sulfide (H ₂ S)	1-hr ^(d) ½-hr ^(e) ½-hr ^(f)	0.010 ppm 0.100 ppm 0.030 ppm	--- --- ---	--- --- ---
Total Reduced Sulfur ^(b)	½-hr ^(d) ½-hr ^(e) ½-hr ^(f)	0.003 ppm 0.010 ppm 0.003 ppm	--- --- ---	--- --- ---
Ozone (O ₃) ^(c)	1-hour 8-hour	--- ---	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	---	1.5 µg/m ³	1.5 µg/m ³

Notes: AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean.

ppm = parts per million; µg/m³ = micrograms per cubic meter.

- The PM_{2.5} standard (particulate matter with a 2.5 µm diameter or smaller) will be implemented over the next few years. USEPA plans to designate areas as being in attainment or nonattainment of the PM_{2.5} standard in December 2004.
- Total reduced sulfur does not include H₂S.
- The 8-hour O₃ standard will replace the 1-hour standard in June 2005, one year after the effective date of EPA's recent nonattainment designations. Meanwhile, the 1-hour O₃ standard will continue to apply to areas not attaining it.
- Entire state except for the Pecos-Permian Air Basin (AQCR 155), which includes De Baca, Chaves, Curry, Quay, and Roosevelt counties.
- Within the Pecos-Permian Air Basin.
- Within corporate limits of municipalities in the Pecos-Permian Air Basin, or within 5 miles of the corporate limits of municipalities having a population greater than 20,000 and within the Pecos-Permian Air Basin.

Sources: 40 CFR 50; New Mexico Administrative Code 20.2.3.

area established after August 7, 1977, that exceeds 10,000 acres). PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system.

VISIBILITY

CAA Section 169A established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the effect of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas which will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM₁₀ and SO₂ in the lower atmosphere.

GENERAL CONFORMITY

CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

- cause or contribute to any new violation;
- increase the frequency or severity of any existing violation; or
- delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases. The State of New Mexico Environmental Improvement Board has implemented the federal general conformity regulations in Title 20, Chapter 2, Part 98 of the state's Air Quality Regulations.

STATIONARY SOURCE OPERATING PERMITS

In New Mexico, the New Mexico Air Quality Bureau (NMAQB) Permitting Section processes permit applications for industries that emit pollutants to the air. The Permitting Section consists of two groups: a) New Source Review (NSR), and b) Title V. NSR is responsible for issuing construction permits, technical and administrative revisions or modifications to existing permits, NOIs for smaller industrial operations, and No Permit Required determinations.

Construction Permits (under NSR) are required for all sources with the potential emission rate greater than 10 pounds per hour, or 25 tons per year (TPY), of criteria pollutants (such as nitrogen oxides [NO_x] and CO). Air quality permits must be obtained for new or modified sources. Title V of the CAA Amendments of 1990 requires states to issue Federal Operating Permits for major stationary sources. A major stationary source in an attainment or maintenance area is a facility (i.e., plant, base, or activity) that emits more than 100 TPY of any one criteria air pollutant, 10 TPY of a hazardous air pollutant (HAP), or 25 TPY of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality (NMAQB 2003).

3.7.2 Regional Air Quality

Federal regulations at 40 CFR 81 delineate certain air quality control regions (AQCR) which were originally designated based on population and topographic criteria closely approximating each air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Therefore, the ROI for the proposed action is the Pecos-Permian Basin Intrastate AQCR (AQCR 155), which includes Chaves, Curry, DeBaca, Eddy, Quay, and Roosevelt counties in New Mexico (USEPA 2004a).

ATTAINMENT STATUS

A review of federally published attainment status for New Mexico in 40 CFR 81.332 indicated this region is designated as in attainment (i.e., meeting national standards) for all criteria pollutants, including CO, NO₂, SO₂, PM₁₀, O₃, and Pb. Based on recent monitoring data, the USEPA has designated Curry and Roosevelt Counties as in attainment for its 8-hour ozone standard (USEPA 2004b), effective June 15, 2004. The governor of New Mexico has recommended to USEPA that the entire state be designated as in attainment for USEPA's PM_{2.5} standard (USEPA 2004c).

PSD CLASS I AREAS

Mandatory PSD Class I areas for the State of New Mexico are listed under 40 CFR 81.421. The nearest PSD Class I area is the Salt Creek Wilderness Area, located approximately 60 miles south of MAFR.

CLIMATE

The general climate for the region surrounding Cannon AFB and MAFR is semi-arid, with light precipitation, abundant sunshine, and low relative humidity. The area undergoes the basic climatic trend of four seasons. The down-slope warming of air from the mountains tends to modify and temper the air masses, which pass over this area from the west and northwest. Winds with a northwesterly component blow down slope and enhance atmospheric ventilation. Winds with a component from the south and east blow upslope and lead to increased cloud formation and precipitation.

Winds in southeastern New Mexico are often gusty and can average 10 miles per hour (mph) or greater. Wind speeds are typically highest during March and April. Based on a 10-year period, the prevailing surface wind direction is from the west. These west winds occur primarily from

October to May. In the warmer months, the winds tend to be from the south. The annual mean wind speed is approximately 12 mph. Monthly averages range from 10 to 14 mph with spring being the windiest season. Frontal winds may exceed 30 mph for several hours and reach peak speeds of more than 50 mph (Western Regional Climate Center 2003; DeBruin et al. 1995).

The atmosphere in the region is generally well mixed. The seasonal and annual average mixing heights can vary from 400 feet in the morning to 4,000 feet in the afternoon. The morning mixing heights are usually low, due to night-time heat loss from the ground, which produces surface-based temperature inversions. After sunrise, these inversions quickly break up, and solar heating of the earth's surface results in good vertical mixing in the lower layers of the atmosphere. Relative humidity ranges from 60 percent during mornings to 30 percent during afternoons.

Dust is frequently entrained into the atmosphere in this region of the country due to of gusty winds and the semi-arid climate. The Texas Panhandle-eastern New Mexico area is considered one of the worst areas in the U.S. for windblown dust. Occasionally this windblown dust is of sufficient quantity to restrict visibility. A majority of the seasonal dust storms occur in March and April, when the wind speeds are typically high (National Oceanic and Atmospheric Administration 1998a, 1998b; NewMexico.org 2003).

CURRENT EMISSIONS

Air emissions at Cannon AFB from stationary sources include external combustion, fuel storage and dispensing operations, internal combustion engines, engine test cell, chemical usage, painting, degreasers, woodworking, abrasive blasting, and fuel cell maintenance. In the following table, particulate matter is equivalent to total suspended particulates (TSP) and includes PM₁₀ as a component of the total; NO_x includes NO₂ and other nitrogen compounds; and sulfur oxides (SO_x) includes SO₂ and other sulfur compounds. As volatile organic compounds (VOCs) and NO_x are precursors to the formation of O₃ in the atmosphere, control of these pollutants is the primary method of reducing O₃ concentrations in the atmosphere. Table 3-7 summarizes the results of an emissions inventory for stationary sources at Cannon AFB for calendar year 2002 (AFIOH/RSEQ 2003).

Table 3-7. Baseline Emissions at Cannon AFB, Calendar Year 2002

	ANNUAL EMISSIONS (TONS PER YEAR)				
	CO	VOC	NO _x	SO _x	PM ₁₀
Stationary Sources	37.0	39.5	28.4	0.8	2.8

Source: AFIOH/RSEQ 2003.

REGIONAL AIR EMISSIONS

The previous section lists on-base emissions for Cannon AFB. The NEPA process must also consider impacts from mobile sources and indirect emissions related to the project, some of which (i.e., commuting of new employees to and from the facility) occur outside of the

installation. For comparison purposes, Table 3-8 lists county-wide emissions for Curry and Roosevelt Counties, as compiled by the USEPA in its National Emissions Inventory, which was last updated in 1999 (USEPA 2003). The 1999 National Emissions Inventory contains estimates of annual emissions for stationary and mobile sources of air pollutants in each county, on an annual basis.

Table 3-8. Air Emissions Inventory Curry and Roosevelt Counties, New Mexico Calendar Year 1999

	POLLUTANTS (IN TONS PER YEAR)				
	CO	SO ₂	NO _x	PM ₁₀	VOC
Curry County, NM					
Stationary Sources	4712.4	415.1	4,608.3	19,905.5	2,083.3
Mobile Sources	9,553.9	38.7	30.6	30.4	778.8
Roosevelt County, NM					
Stationary Sources	6,132.8	2,982.7	2,831.9	1,432.9	15,256.5
Mobile Sources	5,221.1	16.9	0.0	413.0	18.5

Source: USEPA 2003.

3.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Occupational Safety and Health Administration (OSHA); and the Emergency Planning and Community Right-to-Know Act (EPCRA). Hazardous materials have been defined in AFI 32-7086, Hazardous Materials Management, to include any substance with special characteristics which could harm people, plants, or animals. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes which could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous due to its toxicity, reactivity, ignitability, or corrosivity. In addition, certain types of waste are “listed” or identified as hazardous in 40 CFR 263. The ROI for hazardous materials and wastes includes Cannon AFB and MAFR.

3.8.1 Hazardous Materials

The majority of hazardous materials used by Air Force and contractor personnel at Cannon AFB are controlled through an Air Force pollution prevention process called the Pollution Prevention Program Plan (P2 Plan). This process provides centralized management of the procurement, handling, storage, and issuing of hazardous materials and turn-in, recovery, reuse, or recycling of hazardous materials. The P2 Plan process includes review and approval by Air Force personnel to ensure users are aware of exposure and safety risks. Base management plans further serve to ensure compliance with applicable federal, state, and local regulations.

Aircraft flight operations and maintenance, as well as installation maintenance, require the storage and use of many types of hazardous materials. These materials, such as flammable and combustible liquids, include acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, and sealants.

MAFR is operated by a contractor who monitors and maintains the televised ordnance scoring system, bombing and gunnery targets, and access roads. Small quantities of hazardous materials, such as paints, are used at the range.

3.8.2 Hazardous Waste

Cannon AFB is a large-quantity hazardous waste generator, generating more than 2,200 pounds of hazardous waste per month. Hazardous wastes are generated from a variety of functions on base, including aircraft and vehicle operations and maintenance (hydraulic and lubricating oils and JP-8 jet propulsion fuels); medical and dental facilities; morale, welfare, and recreation; photographic development and security operations. These wastes include solvents, metal-contaminated spent acids, and sludge from wash racks. Cannon AFB recycles lubricating fluids, batteries, oil filters, absorbents with petroleum products and JP-8 grade fuel. Hazardous wastes generated are managed in accordance with the Cannon AFB Hazardous Waste Management Plan, Plan 32-2, dated 28 August 2000.

Generators of hazardous wastes are responsible for properly segregating, storing, characterizing, labeling, marking, packaging, and transferring all hazardous wastes for disposal from the initial accumulation point (IAP) to the established 90-day storage area according to federal, state, local, and Air Force regulations. There are approximately 89 IAPs located on base and 89 to 114 established waste streams; the present number may vary with changes in operational procedures and management practices. Approximately 59,927 pounds of hazardous wastes were disposed of in calendar year 2003.

Cannon AFB closed their Hazardous Waste Storage facility, Building 226. The Part B storage building clean closed as approved by the NMED on September 19, 2003. Installation waste generators manage their respective waste generations in containers, maximum quantity of 55 gallons, at or near the point of generation and under the control of the process operator. Full containers are removed from the accumulating area and transferred to the less than 90-day interim storage on-site. Later, the hazardous waste generation is shipped off-site on a manifest to an approved Treatment Storage disposal Facility permitted to accept the waste. Return signed and dated manifest complete the paperwork trail for all off-site waste shipments.

MAFR qualifies as a “conditionally exempt, small quantity generator” due to the low quantity of wastes generated. Cannon AFB has a Facility Response Plan, which addresses on-base storage locations and proper handling procedures of all hazardous materials to minimize potential spills and releases. The plan further outlines activities to be undertaken to minimize the adverse effects of a spill, including notification, containment, decontamination, and cleanup of spilled materials. The plan meets the Federal Spill Prevention Control and Countermeasures requirements.

3.8.3 Storage Tanks

There are currently 68 aboveground storage tanks (ASTs) located at Cannon AFB. No underground storage tanks are located at Cannon AFB. The ASTs range in size and function from a 132-gallon diesel fuel tank used for an emergency generator to an 840,000-gallon fuel tank used for aircraft refueling. All storage tanks at Cannon AFB are in compliance with applicable state and federal regulations. Ten tanks are located within the ROI (Table 3-9).

Table 3-9. Storage Tanks in the ROI

<i>Tank ID</i>	<i>Tank Type</i>	<i>Stats</i>	<i>Size</i>	<i>Fuel</i>
10	AST	Active	1,000	Diesel
182	AST	Active	2,000	JP-8
187	AST	Active	10,000	JP-8
378	AST	Active	25,000	MOGAS
394	AST	Active	420,000	JP-8
395	AST	Active	840,000	JP-8
396	AST	Active	840,000	JP-8
398	AST	Active	10,000	Diesel
399	AST	Active	20,000	Diesel
4099	AST	Active	300	Diesel

Source: Personal communication, Smith 2004.

3.8.4 Solid Waste Management

Solid waste generated on Cannon AFB is removed by contract services to either the Clovis Regional Landfill or the Cannon AFB Recycling Center. The Cannon AFB Recycling Center is located in the southwest corner of the base, just east of Perimeter Road. In FY 2003, Cannon AFB generated 48,840 tons of solid waste and diverted 379 tons to mulch. The base also generated 43,268 tons of construction and demolition debris and diverted 39,413 tons for recycling. Clovis Regional Landfill is a sanitary landfill, but also accepts construction and demolition waste. In 1999, this facility received 260,000 cubic yards of waste of all types. With a total capacity of about 2,517,500 tons (NMED 2000), it has a remaining useful life of approximately 9 years (based on 2000 solid waste statistics).

Non-hazardous wastes generated at MAFR typically consist of metal fragments from inert ordnance, targets, and training ammunition. The Cannon AFB Explosive Ordnance Disposal (EOD) team is responsible for removal of range debris. Solid waste (i.e., scrap munitions) is currently being stored in several locations within the target impact area at MAFR. Scrap munitions include inert (non-explosive) ordnance. The EOD team has primary responsibility for ensuring all inert ordnance and ordnance residue have been rendered useless prior to removal and disposal.

3.8.5 Asbestos

Asbestos containing materials (ACMs) are those materials which contain greater than 1 percent asbestos. Friable, finely divided, and powdered wastes containing greater than 1 percent asbestos are subject to regulation. Friable waste is one which can be reduced to a powder or dust under hand pressure when dry. Non-friable ACMs, such as floor tiles, are considered to be non-hazardous, except during removal and/or renovation, and are not subject to regulation.

An asbestos management plan provides guidance for the identification of ACMs and the management of asbestos wastes. An asbestos facility register is maintained by the base CE. The design of building alteration projects and requests for self-help projects are reviewed to determine if ACMs are present in the proposed work area. ACM wastes are removed by contractor and disposed of in accordance with state and federal regulations.

3.8.6 Environmental Restoration Program

The DoD developed the Environmental Restoration Program (ERP) to identify, investigate, and remediate potentially hazardous material disposal sites existing on DoD property prior to 1984. Thirty-three sites have been identified at Cannon AFB and are regulated under CERCLA. Twenty-four sites have been closed or require no further action. The Cannon AFB Management Action Plan (Air Force 2003a) summarizes the current status of the base environmental programs, including SWMUs and Areas of Concern, and presents a comprehensive strategy for implementing actions necessary to protect human health and the environment. This strategy integrates activities under the ERP and the associated environmental compliance programs supporting full restoration of the base. Currently, there are a total of 25 SWMUs and 8 Areas of Concern at Cannon AFB.

ACC policy requires any proposed project on or near a Cannon AFB ERP site be coordinated through the Cannon ERP Manager. Construction and demolition would take place at or near several ERP sites (LF-25, SD-15, SD-17, SD-20, SS-19, and WP-14).

ERP Site LF-25 is a concrete rubble pile covering approximately 30 acres adjacent to perimeter road on the east area of the base. This site is located adjacent to the site for construction of the raw water distribution system. The rubble consists mainly of materials from demolished World War II era facilities (bricks, concrete blocks, and asphalt road and runway material). Two or more cut and burn landfill trenches were located under the rubble. In FY 2000, an abatement project removed all asbestos siding and concrete rubble and covered the site with topsoil. A Remedial Investigation was conducted in 1992; Feasibility Study (FS) was conducted in 1995 and a Record of Decision (ROD) submitted in 1996. Long-term monitoring continues and No Further Action (NFA) will be requested for this site. This site is considered closed.

ERP Site SD-15 is an AGE Drainage Ditch remaining after railroad tracks were removed in the late 1960s. This site originated on the northwest corner of Building 184 and ran parallel to the flightline sides of Buildings 186, 191, 192, and 193. In 1991, approximately 400 feet of the ditch nearest to Building 192 was filled and covered with concrete due to nearby construction. The ditch currently received stormwater runoff from flightline operations and nearby roads. Sampling investigations (SI) conducted in 1982 identified oil and grease contamination. A

Remedial Investigation (RI) was conducted in 1992; and a Class 3 Permit Modification Request for NFA was submitted in September 2000. A ROD/Decision Document (DD) was submitted in 1996; this site is considered closed.

ERP Site SD-17 is the Old Entomology Rinse Area behind Building 2160 (pesticide storage building) north of the sewage lagoons. A sink behind Building 2160 was used to rinse pesticide and herbicide equipment. Building 2160 was demolished in September 1984. An ERP Phase IV-AA was conducted in 1964; a SI was conducted in 1985; a RI was conducted in 1992; a FS was conducted in 1996; and a ROD/DD was submitted 1996. Investigation results indicated no Remedial Action was required. A Class 3 Permit Modification Request for NFA and removal of the unit was submitted in September 2000. This site is considered closed.

ERP Site SD-20 is the 3.5-acre Northeast Stormwater Drainage Area which stretches from the northeast end of Runway 4/22 to a nearby open field. Water containing oil and grease, fuels, solvents, and alkaline-based aircraft cleaning compounds could exist at this site. This site is covered with thick vegetation (prairie grasses and wetland grasses) due to the quantity of runoff water which collects at the site. A SI was conducted in 1985; a RI was conducted in 1992; a FS was conducted in 1996; and a ROD/DD was submitted in 1996, indicating NFA was recommended. A request for NFA will be submitted and this site is considered closed.

ERP Site SS-19 is the site of two motor gasoline (MOGAS) spills (2,000 – 3,000 gallons) from overturned fuel trucks. These spills occurred in the early 1960s at the site location of Argentinia Avenue southeast of Building 444. A portion of this spill site is located under Argentinia Avenue. An SI was conducted in 1985; an RI was conducted in 1992; an FS was conducted in 1996; and a ROD/DD was submitted in 1996 indicating NFA was needed. A Class 3 Permit Modification Request for NFA was submitted in September 2000; and this site is considered closed.

ERP Site WP-14 is a sludge weather pit located adjacent to the north installation boundary fence. This site is a shallow 10 square foot area which was last used in 1980 to weather sludge from leaded gas storage tanks. An SI was conducted in 1985; an Appendix I, Phase I RFI investigation was conducted in 1987 and NFA was recommended and agreed upon by USEPA, with the stipulation boundary markers be installed. These markers were installed under the Appendix I, Phase II investigation. A ROD/DD was submitted in January 1997; and this site is considered closed.

3.9 SAFETY

This section addresses ground and explosive safety associated with operations conducted at Cannon AFB, New Mexico. Ground safety considers issues associated with operations and maintenance activities supporting base operations and activities on MAFR. Explosive safety discusses the management and use of ordnance or munitions associated with airbase operations and training activities conducted in various elements of training airspace. As the construction activities would not involve a change in airspace or the way pilots fly, this analysis does not involve a discussion of aircraft mishaps.

Two ROIs exist for the safety analysis. The first ROI constitutes the Cannon AFB. The second ROI encompasses the land at MAFR.

3.9.1 Ground Safety

Ground Safety includes many categories (AFI 91-204) consisting of ground and industrial, operational and OSHA, motor vehicles, off-duty military, maritime, and fire. Ground mishaps can occur on ground or water or on or off an installation, and may involve Air Force personnel, contractors, and property losses. They can occur in a work environment from the use of equipment or materials including administrative, supply, custodial, and maintenance for Air Force functions.

Day-to-day operations and maintenance activities conducted at Cannon AFB are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements.

Cannon AFB has its own fire and emergency services which meet all established Air Force staffing and equipment standards. Should extraordinary requirements occur, the Cannon AFB Fire Department has established mutual aid support agreements with the nearby communities of Clovis, Portales, Texico, House, and MAFR (Air Force 2004).

The 27 FW Fire Department provides an on-site fire response and suppression capability on MAFR. While the assigned fire suppression equipment has proven to be adequate, large earth-moving equipment, which is on site to support range operations, is also available for fire suppression requirements. The Range Control Officer on MAFR coordinates with the Fire Department on a daily basis to determine the local fire danger. If risk is excessive, certain restrictions on range operations may be imposed. These restrictions could range from limiting the type of ordnance used, to the complete curtailment of all ordnance use (Air Force 2004).

3.9.2 Explosives Safety

Air Force Manual 91-201 Explosives Safety Standards represents the Air Force guidelines for complying with explosives safety. This regulation, as well as AFI 91-204, identifies explosive safety mishaps involved in both explosive and chemical agents. Explosives include ammunition, propellants (solid and liquid), pyrotechnics, explosives, warheads, explosive devices, and chemical agents and associated components presenting real or potential hazards to life, property, or the environment.

Siting requirements for munitions and ammunition storage and handling facilities are based on safety and security criteria. Air Force Manual 91-201 Explosives Safety Standards requires defined distances be maintained between munitions storage areas and a variety of other types of facilities. These distances, called QD arcs, are determined by the type and quantity of explosive material to be stored. Each explosive material storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. Within these QD arcs, development is either restricted or prohibited altogether in order to ensure safety of personnel and to minimize potential for damage to other facilities in the event of an accident. In addition, explosive material storage and handling facilities must be located in areas where security of the munitions can be maintained at all times. Identifying the QD arcs ensures construction does not occur within these areas.

Cannon AFB controls, maintains, and stores all ordnance and munitions required for mission performance. Ordnance is handled and stored in accordance with Air Force explosive safety directives (AFI 91-201), and all munitions maintenance is carried out by qualified personnel using Air Force-approved technical data. Ample storage facilities exist, and all facilities are approved for the ordnance they store. No storage facility waivers are currently in effect.

The Air Force imposes procedures for arming and de-arming munitions and ordnance. All such activities occur on four defined arm/de-arm pads. An arm/de-arm pad is located at the end of each runway and at the specified distance for safety away from incompatible land uses. Air Force safety procedures require safeguards on weapons systems and ordnance which ensure against inadvertent releases.

Both live and inert munitions are stored and handled at Cannon AFB. Inert training ordnance accounts for the vast majority of training materials. All munitions are handled and stored in accordance with Air Force Explosive Safety Directives, and trained, qualified personnel using Air Force approved technical data carry out all munitions maintenance. All storage facilities are approved for the specific ordnance involved. QD arcs for Cannon AFB are shown on Figure 3-2. Munitions are not stored at MAFR.

3.10 NOISE

Noise is defined as unwanted sound or, more specifically, as any undesirable sound which interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON] 1992). Human response to noise varies according to the type and characteristics of the noise, distance between the noise source and the receptor, sensitivity of the receptor and time of day.

Due to wide variations in sound levels, sound is measured in decibels (dB), which is a unit of measure based on a logarithmic scale (e.g., 10-dB increase corresponds to a 100 percent increase in perceived sound). According to the USEPA Office of Noise and Abatement (1972-1982), under most conditions, a 5-dB change is necessary for noise increases to be noticeable to humans. Sound measurement is further refined by using an A-weighted decibel scale (dBA) emphasizing the range of sound frequencies which are most audible to the human ear (between 1,000 and 8,000 cycles per second).

A day-night average A-weighted sound level (DNL) is a noise metric which averages A-weighted sound levels over a 24-hour period and includes an additional 10-dB penalty added to noise events occurring between 10:00 p.m. and 7:00 a.m. This penalty is intended to compensate for generally lower background noise levels at night and the annoyance of nighttime noise events. DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation, Federal Aviation Administration (FAA), USEPA, the Veterans' Administration, and DoD. HUD uses guidelines established by FICON to determine acceptable levels of noise exposure for various types of land use (Table 3-10).

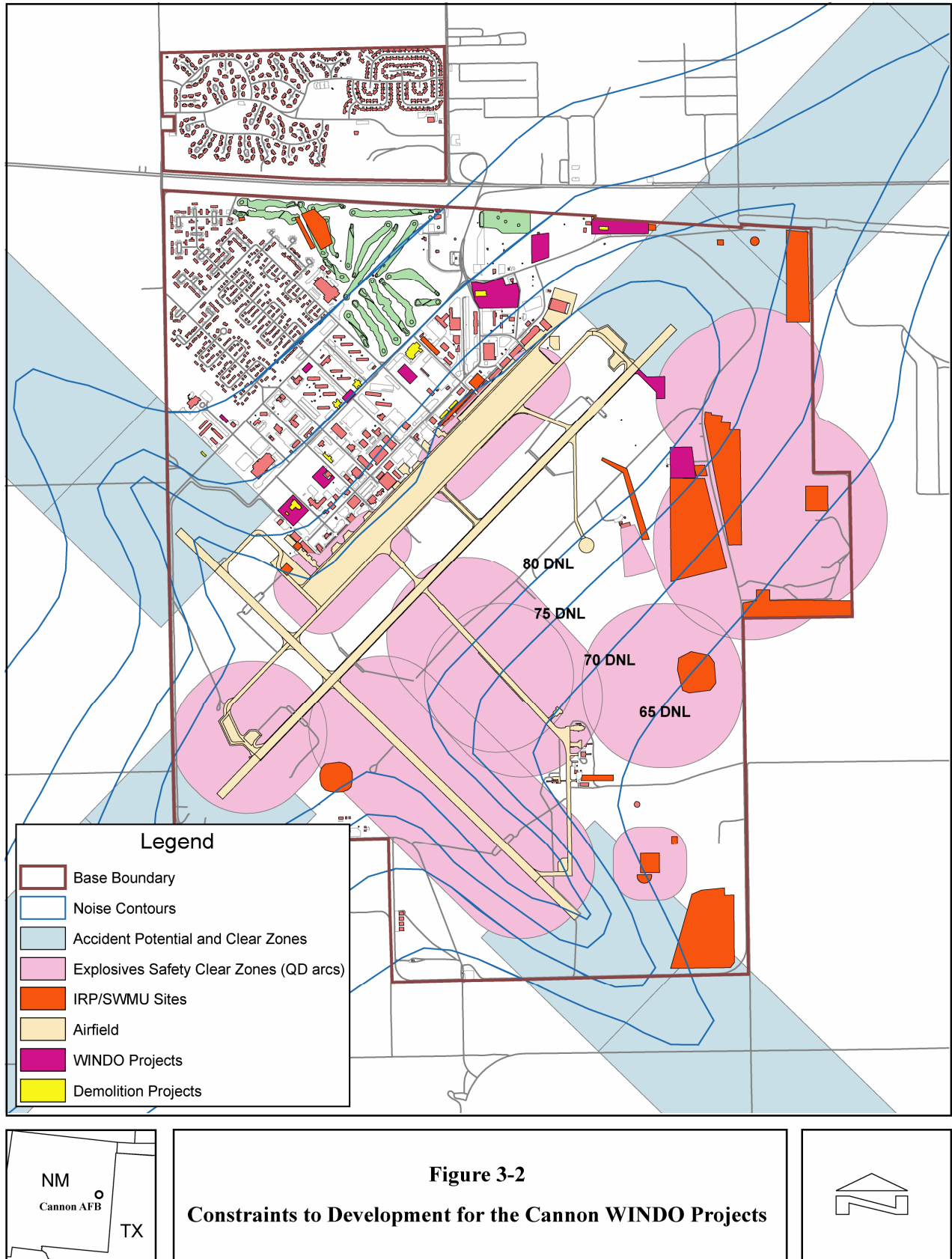


Table 3-10. Land Use Compatibility for Noise Zones

<i>Land Use</i>	NOISE ZONES			
	(65-69 dB)	(70-74 dB)	(75-79 dB)	(80+ dB)
Residential	Generally Compatible ¹	Generally Compatible ¹	Not Compatible	Not Compatible
Manufacturing	Compatible	Generally Compatible ²	Generally Compatible ³	Generally Compatible ⁴
Transportation communication, and utilities	Compatible	Generally Compatible ²	Generally Compatible ³	Generally Compatible ⁴
Trade	Compatible	Generally Compatible ²	Generally Compatible ³	Generally Compatible ⁴
Public services	Compatible	Generally Compatible ⁵	Generally Compatible ⁵	Not Compatible
Hospitals, nursing homes	Generally Compatible ⁶	Generally Compatible ⁶	Not Compatible	Not Compatible
Educational services	Generally Compatible ⁶	Generally Compatible ⁶	Not Compatible	Not Compatible
Cultural, recreational, and entertainment	Generally Compatible ⁶	Generally Compatible ⁶	Not Compatible	Not Compatible
Agricultural	Generally Compatible ⁷	Generally Compatible ⁸	Generally Compatible ⁹	Generally Compatible ¹⁰
Livestock farming and animal breeding	Generally Compatible ⁷	Generally Compatible ⁸	Generally Compatible ⁹	Generally Compatible ¹⁰
Forestry Activities and Services	Generally Compatible ⁷	Generally Compatible ⁸	Generally Compatible ⁹	Generally Compatible ¹⁰
Fishery Activities and Services	Compatible	Compatible	Compatible	Compatible
Mining Activities and Services	Compatible	Compatible	Compatible	Compatible

Notes:

- Although local conditions may require residential use, it is discouraged in A day-night average a-weighted sound level/Community Noise Equivalent Level (DNL/CNEL) 65-69 dB and strongly discouraged in DNL/CNEL 70-74 dB. The absence of viable alternative development options should be determined and an evaluation indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals; where community determines the residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 65-69 dB and DNL/CNEL 70-74 dB should be incorporated into building codes and considered in individual approvals; NLR criteria will not eliminate outdoor noise problems. Building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.
- Measures to achieve the same NLR as required for facilities in DNL/CNEL 65-69 dB range must be incorporated into design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- Measures to achieve the same NLR as required for facilities in DNL/CNEL 70-74 dB range must be incorporated into design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- Measures to achieve the same NLR as required for facilities in DNL/CNEL 75-79 dB range must be incorporated into design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- Measures to achieve the NLR DNL/CNEL 65-69 dB or DNL/CNEL 70-74 need to be incorporated into the design and construction of structures.
- Land use is generally compatible, however, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. Also dependent on individual federal agencies and program considerations of general cost and feasibility factors, as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.
- Residential buildings require the same NLR as required for facilities in DNL/CNEL 65-69 dB range.
- Residential buildings require the same NLR as required for facilities in DNL/CNEL 70-74 dB range.
- Residential buildings are not permitted.
- Residential buildings are not permitted; within each land use category, uses exist where further deliberating by local authorities may be needed due to the variation of densities in people and structures.

db = decibels; DNL/CNEL = A day-night average a-weighted sound level/community noise equivalent level; NLR = noise level reduction

Source: Air Force 1999.

Ambient background noise in urbanized areas typically varies from 60 to 70 dBA, but can be higher; suburban neighborhoods experience ambient noise levels of approximately 45 to 50 dBA (USEPA 1978). Table 3-11 identifies noise levels associated with common indoor and outdoor activities and settings and identifies subjective human judgment of noise levels, specifically the perception of noise levels doubling or being halved.

Table 3-11. Typical A-Weighted Sound Levels

<i>Noise Source</i>	<i>A-Weighted Sound Level in Decibels</i>	<i>Subjective Evaluation</i>	<i>Loudness Compared to 70 dB</i>
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a few feet away	110	Very Loud	16 times as loud
Chainsaw ¹	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Heavy Truck at 50 feet	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Moderately Loud	
Pneumatic Drill; Vacuum Cleaner	80	Moderately Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Sound Level for Comparison	70	Moderately Loud	Comparison level
Average Office	60	Moderate	½ times as loud
Suburban Street	55	Moderate	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	¼ times as loud
Large Transformer	45	Quiet	
Average Residence Without Stereo Playing	40	Faint	⅛ times as loud
Soft Whisper	30	Faint	
Human Breathing	10	Very Faint	Threshold of Hearing

Note: 1. National Institute for Occupational Safety and Health 2003.

Source: LSA Associates, Inc. 2002 and FICON 1992.

A noise-sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals or certain wildlife species.

3.10.1 Existing Conditions

Noise sources at Cannon AFB are typical of military base operations and consist primarily of aircraft, roadways, and small development activities. Figure 3-2 shows the noise contours on base associated with aircraft activities. As expected, the loudest areas on the base are located along the flightlines. Sensitive noise receptors on Cannon AFB consist of residential areas, schools, churches, community/recreation centers, and offices. These land uses typically fall outside of the 65 dB noise contour. The DNL for MAFR is estimated to be 59.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE AND VISUAL RESOURCES

4.1.1 Methodology

Potential impacts to land use are evaluated by determining if an action is compatible with existing land use and in compliance with adopted land use plans and policies. In general, land use impacts would be considered significant if they were to (1) be inconsistent or noncompliant with applicable land use plans and policies; (2) prevent continued use or occupation of an area; or (3) be incompatible with adjacent or nearby land use to the extent public health or safety is threatened.

4.1.2 Proposed Action

Land use on the base would not be adversely impacted by the proposed construction and associated demolition. The proposed facilities were sited to ensure compatibility with existing on-base land uses identified in the Base Master Plan. Tables 4-1 through 4-3 show the compatibility of the proposed construction projects with the existing land use. The proposed action does not involve a land transfer or ownership nor does it prevent use. The proposed construction activities would not affect off base land uses.

Table 4-1. Land Use Compatibility for Short Range Projects at Cannon AFB

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Land Use Category</i>	<i>Compatibility</i>
939057	05	Raw Water Distribution System	Open Space	Compatible
030145	06	Entomology Shop	Industrial	Compatible
993002	06	AGE Complex	Community Commercial	Compatible
053001	06	Fill Stands	Industrial	Compatible

Table 4-2. Land Use Compatibility for Long Range Projects at Cannon AFB

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Land Use Category</i>	<i>Compatibility</i>
053002	09	Dining Hall and Airman's Center	Community Commercial	Compatible
063002	09	Communications Facility	Administration	Compatible
043001	09	Base Library and Education Center	Community Commercial	Compatible
053003	10	Fitness Center	Outdoor Recreation	Compatible
033002	10	Transportation Complex	Industrial	Compatible
063003	10	Lodging Office and DV Suites	Housing Accompanied	Compatible
033003	11	CE Pavements and Equipment Shop	Industrial	Compatible

Table 4-3. Land Use Compatibility for Short Range Projects at MAFR

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Land Use Category</i>	<i>Compatibility</i>
030121	04	Range Control Tower	N/A	Compatible
020131	05	Range Control Building	N/A	Compatible
980008	05	Fire Station 3	N/A	Compatible

4.1.3 No-Action Alternative

Under the No-Action Alternative, the 27 FW would maintain its existing facilities and would not build the proposed new facilities, as described in detail in Chapter 2.0. Continued use and maintenance of the existing degraded and inefficient facilities and infrastructure would require the 27 FW continue to operate under unnecessarily inefficient conditions.

4.2 INFRASTRUCTURE

4.2.1 Methodology

Level of service is the primary transportation and utility service issue. Criteria for evaluating impacts to transportation and utility service include potential for disruption and/or permanent degradation of the resource.

4.2.2 Proposed Action

Under the Proposed Action, the 27 FW would implement demolition and construction projects associated with the WINDO plan, described in detail in Chapter 2.0. Implementation of the Proposed Action would not alter traffic circulation. Haul routes related to demolition and construction traffic have not been determined. Truck traffic associated with WINDO projects would be routed through one base entry gate and routes would be established to avoid base housing areas as much as practicable. At MAFR compound, trucks would use the primary access road to haul material and debris.

Construction activities could result in some temporary interruption of utility services and minor hindrance of transportation and circulation at the base. Truck traffic and privately-owned vehicle use by commuting project workers would generate minor increases in vehicle trips per day on base roads. Temporary lane closures may be necessary during demolition and construction activities. Appropriate signage and detours to maintain access would be provided. These impacts would be temporary, occurring only for the duration of the construction period. No significant impact to transportation or utilities, either on Cannon AFB, MAFR, or in adjacent areas, is anticipated under the Proposed Action.

4.2.3 No-Action Alternative

Under the No-Action Alternative, the 27 FW would maintain their existing facilities and would not build the proposed new facilities, as described in detail in Chapter 2.0. Continued use and maintenance of the existing degraded and inefficient facilities and infrastructure would require the 27 FW continue operating under unnecessarily inefficient conditions.

4.3 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.3.1 Methodology

No long-term change in base employment or expenditures is anticipated as a result of the proposed action, which consists of a series of construction projects of relatively short duration (less than five years). Native American communities were not of particular concern since no reservations are located within the vicinity of Cannon AFB. Potential impacts to traditional resources are discussed in Section 4.4, Cultural Resources. Hispanic and Latino persons represent the largest minority group in the ROI, however they account for a smaller proportion of the ROI population than for the state of New Mexico as a whole. The youth population in the ROI is similar, in proportion, to the state level and is likely to be concentrated in the urban areas of Clovis and Portales, rather than in the vicinity of the range.

4.3.2 Proposed Action

Under the Proposed Action, the 27 FW would implement construction projects associated with the WINDO, described in detail in Chapter 2.0. Implementation of the Proposed Action would gradually remove and replace aging facilities and improve base operations. No changes in base personnel are associated with the Proposed Action.

Construction activities associated with the Proposed Action are scheduled to take place over the next eight years. Table 4-4 presents the anticipated cost associated with each project by starting

FY. Annual expenditures associated with the WINDO projects would peak in FY06 to FY09. WINDO project expenditures from \$17.6 to \$27.4 million would represent between 40 percent and 62 percent of the \$44.0 million of Cannon AFB contract purchases of goods and services.

Table 4-4. Cost Estimates for Cannon WINDO Projects (\$ thousands)

<i>Project Number</i>	<i>Infrastructure Improvement Project</i>	FISCAL YEAR OF PROJECT START					
		04	05	06	09	10	11
030293	Demolition of Abandoned Taxiway	20					
020131	Construction of Range Control Building		600				
98008	Renovation of Fire Station 3		300				
030121	Construction of Range Control Tower	1,200					
030145	Construction of Entomology Shop, B212			500			
993002	Construction of Aerospace Ground Equipment (AGE) Complex			7,800			
053002	Construction of Dining Hall/ Airmen's Center				9,300		
063002	Construction of Communications Facility				12,500		
043001	Construction of Base Library/Education Center				5,600		
053003	Construction of Fitness Center					10,800	
033002	Construction of Transportation Complex					7,000	
033003	Construction of Civil Engineering (CE) Pavements and Equipment Shop						3,000
063003	Construction of Lodging Office/Distinguished Visitor (DV) Suites					1,500	
939057	Construction of Raw Water Distribution System		500				
053001	Construction of Fill Stands			9,300			
Total Expenditures		1,220	1,400	17,600	27,400	19,300	3,000

Potential socioeconomic impacts generated by the proposed demolition and construction activity would include increased employment and earnings in the ROI. Construction economic stimulation would be beneficial to the ROI. Such effects would be temporary, only occurring for the duration of the construction period. No significant impact to housing or community services is expected to occur as a result of the WINDO projects. No permanent or long-lasting socioeconomic impacts are anticipated as a result of implementation of the Proposed Action.

4.3.3 No-Action Alternative

Under the No-Action Alternative, the 27 FW would maintain their existing facilities and would not build the new facilities proposed, as described in detail in Chapter 2.0. Failure to implement the proposed improvements would not generate any of the construction-related employment or earnings impacts associated with the Proposed Action. Implementation of the No-Action Alternative would not result in any significant adverse socioeconomic or environmental justice impacts.

4.4 CULTURAL RESOURCES

4.4.1 Methodology

A number of federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have been identified as important to Native Americans as outlined in the American Indian Religious Freedom Act and EO 13007, *Indian Sacred Sites*. The Department of Defense's American Indian and Alaska Native Policy of 1999 provides guidance for interacting and working with federally-recognized American Indian governments. DoD policy requires installations to provide timely notice to, and consult with, tribal governments prior to taking any actions which may have the potential to significantly affect protected tribal resources, tribal rights, or American Indian lands.

Analysis of potential impacts to cultural resources considers direct impacts which may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment which contribute to the resource's significance; introducing visual or audible elements which are out of character with the property or alter its setting; or neglecting the resource to the extent which it deteriorates or is destroyed. Direct impacts can be assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources which could be affected. Indirect impacts generally result from increased use of an area.

4.4.2 Proposed Action

Impacts to cultural resources are not expected at Cannon AFB or MAFR under the Proposed Action. All of the project locations have been previously surveyed and no cultural resources are expected to be affected by any of the projects (personal communication, Chandler 2004). Compliance with Section 106 of the NHPA, including SHPO consultation, would be completed prior to initiating the Proposed Action. Contact with the New Mexico Office of Cultural Affairs has been initiated for this action. If previously unknown cultural resources are discovered during construction or demolition, work will cease immediately. Notification of the appropriate parties shall occur within 24 hours. A damage assessment and plan of action will follow. Protection of the resources is the primary concern and continuation of work shall not take place until requirements of all applicable regulations are met.

4.4.3 No-Action Alternative

Under the No-Action Alternative, WINDO construction projects would not take place as proposed. Impacts to cultural resources are not expected under this alternative. Resources would continue to be managed in compliance with federal law and Air Force regulation.

4.5 BIOLOGICAL RESOURCES

4.5.1 Methodology

Potential impacts to biological resources such as habitat, wildlife, or livestock is based on the :

- importance of the resource (i.e., legal, commercial, recreational, ecological, or scientific) of the resource;
- proportion of the resource which would be affected relative to its occurrence in the region;
- sensitivity of the resource to proposed activities; and
- duration of ecological ramifications.

Impacts to resources are significant if species or habitats of high concern are adversely affected over relatively large areas or disturbances cause reductions in population size or distribution of a species of high concern.

Habitat loss and disturbance due to construction are specific issues and concerns for biological resources. Habitat degradation due to post-construction invasion of noxious weeds is also a concern.

4.5.2 Proposed Action

Terrestrial communities possibly impacted by the Proposed Action are mainly improved/landscaped, semi-improved/mowed grassland, or unimproved/disturbed grassland. Plans to re-vegetate and landscape areas associated with the proposed construction would minimize the spread of noxious weeds. Wildlife species affected by the loss or alteration of these habitats

would be those species inhabiting disturbed places or are associated with human habitation. Such species are adapted to disturbance and would only be temporarily displaced.

Wetlands and other jurisdictional water bodies would not be impacted by the Proposed Action or alternatives.

No special-status species would be directly impacted by the Proposed Action. None of the special-status species occur regularly at Cannon AFB, and if any were present, they would be more likely to use the open spaces in the southeast portion of the base. Some species, such as the prairie dog and burrowing owl, could be disturbed by noise associated with construction projects at MAFR. However, these species are regularly exposed to military-training noise and are unlikely to be affected by construction noise and activity. Any disturbance effects would be minor and temporary.

4.5.3 No-Action Alternative

Under the No-Action Alternative, one or more WINDO construction projects would not take place as proposed. Impacts to biological resources are not expected under this alternative. Resources would continue to be managed in compliance with federal law and Air Force regulation.

4.6 PHYSICAL RESOURCES

4.6.1 Methodology

Analysis for physical resources includes the identification and description of resources which could potentially be affected, the examination of the potential effects an action may have on the resource, the assessment of the significance of potential impacts, and the provision of mitigation measures to reduce the potential for impacts. Design actions to reduce impacts include protection of unique geologic features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards and soil limitations. Impacts can be avoided or minimized by proper construction techniques, erosion control measures, project design and project siting.

The limited areas of proposed construction, the great depth to bedrock and to the aquifer in the locations of the proposed facilities make it unlikely potential impacts could occur to geologic or groundwater. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance which would expose soil to wind or water erosion. Impervious surfaces (paved areas and roofs) may contribute to increases in stormwater runoff when they are constructed in locations previously composed of more natural ground cover because no precipitation can infiltrate the soil, resulting in 100 percent runoff.

Secondary impacts to air quality may result from exposure of soils susceptible to wind erosion and to surface water quality if soils susceptible to water erosion were allowed to contribute sediment to the surface water system.

4.6.2 Proposed Action

Under the Proposed Action, newly constructed facilities and facility upgrades, primarily associated with buildings, roads, parking areas and a water distribution system, would have a footprint of just under 0.2 acre at MAFR and 14.8 acres at Cannon AFB. The total area to be disturbed during construction was assumed to be 25 percent larger than the facility footprint, to allow for heavy equipment movement, staging areas for storage of materials, and grading of the sites.

At Cannon AFB, there would be a total of 10 acres of demolition. Approximately 3 acres of the demolition sites would be located where other facilities would be constructed. The total acreage disturbed for facility footprints, construction areas, and demolition would be almost 31 acres over the 6-year period under consideration. Only a portion of the acreage disturbed would occur in any one year.

The site-specific Stormwater Pollution Prevention Plan would be reviewed for each construction project. Only those projects, 1-acre or more, would need to have a Stormwater Pollution Prevention Plan developed. The plan would identify standard construction practices appropriate for the site and soil type to be implemented during construction to minimize wind erosion and offsite sedimentation due to water erosion, and to keep increases in surface water runoff to a minimum. After construction has been completed, all disturbed areas would be stabilized with landscaping, most likely a combination of native plants and gravel ground cover as part of a xeriscape plan, which would minimize erosion and improve infiltration of precipitation.

Due to the relatively flat terrain at both Cannon AFB and MAFR, little cut and fill would be needed to prepare the sites for facility construction. In any construction, the natural soil horizons would be disturbed, if they have not already been disturbed from previous construction. There would be few hazards or limitations to construction of buildings or roads on the soil types at the locations of the proposed facilities. Potential secondary effects from surface-disturbing activities, such as increases in stormwater runoff or offsite sedimentation, would be minimized through the installation and maintenance of standard construction practices and landscaping.

At Cannon AFB, approximately 12 acres of additional impervious surface from new buildings and parking lots have the potential to increase stormwater runoff during precipitation events. In compliance with the USEPA General Permit for Stormwater Discharges, this additional stormwater runoff would be managed to keep quantities to pre-development conditions where practicable. Even if additional stormwater runoff were generated, the existing storm drain system on the base would be able to handle additional flows. At Cannon AFB and MAFR, the flat terrain and permeable soils would cause much of the surface water to infiltrate before leaving the military properties.

At MAFR, construction of two of the three buildings proposed would involve demolition of existing buildings. The total area of surface disturbance at MAFR would be approximately 0.2

acre, including demolition, facility footprints, and an additional 25 percent disturbed during construction.

While soils would be changed by construction activities, the effects would be localized and would not result in significant secondary impacts to wind or water resources because standard construction practices would be implemented. No significant impacts to soil, water, or geologic resources would result from the implementation of the Proposed Action.

4.6.3 No-Action Alternative

Under the No-Action Alternative, no construction would occur and no new impacts to physical resources would result. Conditions would remain as described in Section 3.6.

4.7 AIR QUALITY

4.7.1 Methodology

Air emissions resulting from the Proposed Action were evaluated in accordance with federal, state, and local air pollution standards and regulations. Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

The approach to the air quality analysis was to estimate the increase in emission levels due to the Proposed Action.

According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action which has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required if the Proposed Action occurs within an attainment area. Since Roosevelt and Curry counties are designated as in attainment for all criteria pollutants, a conformity determination is not required and was not performed.

As described in Section 3.7.1, Section 169A of the CAA established the PSD regulations to protect the air quality in regions already meeting the NAAQS. Certain national parks, monuments, and wilderness areas have been designated as PSD Class I areas, where appreciable deterioration in air quality is considered significant. The nearest PSD Class I area is approximately 60 miles from the region potentially affected by the Proposed Action. Therefore, the Proposed Action would be unlikely to have a significant impact on any PSD Class I areas.

4.7.2 Proposed Action

The Proposed Action would involve construction, demolition, trench work, and paving activities, including construction of new structures, additions to or demolition of existing structures, installation of new pavement, and upgrading of existing pavement.

Construction Emissions. Emissions during the construction period were quantified to determine the potential impacts on regional air quality. Calculations of VOC, NO_x, CO, and PM₁₀ emissions from construction, grading, and paving activities were performed using USEPA emission factors compiled in the California Environmental Quality Air Quality Handbook (South Coast Air Quality Management District 1993), Calculations Methods for Criteria Air Pollution Emission Inventories (Jagielski and O'Brien 1994), and Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (O'Brien and Wade 2002). The emission factors for building construction include contributions from engine exhaust emissions (i.e., construction equipment, material handling, and workers' travel) and fugitive dust emissions (e.g., from grading activities). Demolition emissions evaluated include fugitive dust and transport of demolition debris offsite. Trenching and grading emissions include fugitive dust from ground disturbance, plus combustive emissions from heavy equipment from trench work during the entire construction period. Paving emissions include combustive emissions from bulldozers, rollers, and paving equipment, plus emissions from a dump truck hauling pavement materials to the site.

Estimated emissions which would occur from construction, demolition, grading, trench work, and paving activities under the Proposed Action are presented in Table 4-5. The emissions shown would occur over the duration of the construction period, and would be spread over several calendar years (facilities construction under the Proposed Action is proposed to be distributed over the period from 2005-2011).

Emissions generated by construction, demolition, and paving projects are temporary in nature and would end when construction is complete. The emissions from fugitive dust (PM₁₀) would be considerably less than those presented in Table 4-5 due to the implementation of control measures in accordance with standard construction practices. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures used to minimize the amount of dust generated during construction. Using efficient practices and avoiding long periods where engines are running at idle may reduce combustion emissions from construction equipment. Vehicular combustion emissions from construction worker commuting may be reduced by carpooling. Table 4-5 presents a worst-case scenario and, therefore, annual emissions would be lower than shown in Table 4-5.

Table 4-5. Construction Emissions - Proposed Action

Source	EMISSIONS (IN TONS)				
	CO	VOC	NO _x	SO _x	PM ₁₀
Construction	14.6	4.6	67.0	0.0	4.8
Demolition	1.9	0.4	1.8	0.0	0.7
Grading/Trenching	1.0	0.2	1.2	0.1	0.6
New Pavement	1.5	0.3	3.2	0.2	0.2
TOTAL	18.9	5.4	73.3	0.4	6.3

In general, combustive and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality in AQCR 155.

OPERATIONAL EMISSIONS

Once the Proposed construction at Cannon AFB is completed, air emissions are expected to be virtually identical to or less than current operations. Emission sources from buildings planned for demolition would be replaced by emissions from the new buildings. Compared to the old facilities, it is likely that new equipment, such as heating and air conditioning units, would be more efficient and have lower emissions. Therefore, there are no expected increases in operational emissions as a result of implementing the Proposed Action. The installation or modification of any air emission sources, such as boiler and heaters, emergency generators, paint booths, or degreasers may trigger a review of permitting requirements with the New Mexico Air Quality Bureau.

4.7.3 No-Action Alternative

Under the No-Action Alternative, no construction emissions would occur and operational emissions would be identical to current baseline presented in Chapter 3.0.

4.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.8.1 Methodology

The qualitative and quantitative assessment of impacts from solid waste and hazardous materials management focuses on how and to what degree the alternatives affect hazardous materials usage and management, hazardous waste generation and management, and waste disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that cannot be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts which may be caused by hazardous materials and wastes. The following criteria were used to identify potential impacts:

- Generation of 100 kilograms (kg) (or more) of hazardous waste or 1 kg (or more) of an acutely hazardous waste in a calendar month, resulting in increased regulatory requirements.
- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.
- Manufacturing, use, or storage of a compound requiring notifying the pertinent regulatory agency according to EPCRA.
- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

4.8.2 Proposed Action

HAZARDOUS MATERIALS

Construction and demolition of facilities within the WINDO EA may require the use of hazardous materials by contractor personnel. In accordance with Cannon AFB HAZMART procedure, copies of Material Safety Data Sheets must be provided to the base and maintained on the construction site. Project contractors would comply with federal, state, and local environmental laws and would employ affirmative procurement practices when economically and technically feasible.

All hazardous materials and construction debris generated by the proposed project would be handled, stored and disposed of in accordance with federal state and local regulations and laws. Permits for handling and disposal of hazardous material are the responsibility of the contractor. Hazardous materials will not be stored on base. Temporary (more than one day) storage of hazardous materials on base is permitted for the period of the contract. The contractor must report the use and storage of the storage of the hazardous materials to the base. Only quantities of hazardous materials required to carry out the work for the day would be permitted on site.

HAZARDOUS WASTE

Contractor personnel may generate hazardous waste during construction. Storage and disposal of these wastes would be the responsibility of the site contractor. Generation of appreciable amounts of hazardous wastes from projects included in the WINDO is not anticipated. However, IAPs encountered in buildings scheduled for demolition would be relocated to the new locations associated with hazardous waste generation. Any soil suspected of contamination, discovered during the construction or demolition process, would be tested and disposed of in accordance with proper regulations.

In the event of fuel spillage during construction, the contractor would be responsible for its containment, clean up, and related disposal costs. The contractor would have sufficient spill supplies readily available on the pumping vehicle and/or at the site to contain any spillage. In the event of a contractor related release, the contractor shall immediately notify the 27 FW CES/Environmental Management Office and take appropriate actions to correct its cause and prevent future occurrences.

If ACMs or lead-based paint are found in or near the demolition areas, then the following federal and state regulations must be followed.

- ***Asbestos Removal and Disposal.*** Upon classification as friable or non-friable, all waste ACM should be disposed of in accordance with the New Mexico Solid Waste Management Regulations (20NMAC9.1), and transported in accordance with the New Mexico regulations governing Transportation of Hazardous Materials (20NMAC9.1 et seq.).
- ***Lead-Based Paint Removal and Disposal.*** The proposed project should comply with the U.S. Department of Labor, OSHA regulations, and with the USEPA regulations

addressing Lead: Management and Disposal of Lead-Based Paint Debris (40 CFR Part 745).

STORAGE TANKS

The Fill Stands project will include installation of fuel ASTs. These fuel tanks will require registration with the State of New Mexico. ASTs associated with buildings scheduled for demolition would be drained, cleaned and prepared for disposal off site or relocated for use at a new facility if required by Cannon AFB.

SOLID WASTE MANAGEMENT

Demolition of the facilities would generate solid wastes consisting of concrete, brick, wood, structural steel, glass, and miscellaneous metal building components. These materials would be generated during a seven-year period from FY 2004 through FY 2010 (Table 4-6).

Table 4-6. Cubic Yards of Solid Waste Expected from Demolition

<i>Fiscal Year</i>	<i>Cubic Yards of Solid Waste</i>
FY 2004	3,646
FY 2005	No demolition scheduled
FY 2006	17,117
FY 2007	No demolition scheduled
FY 2008	No demolition scheduled
FY 2009	27,143
FY 2010	22,543

The total amount of demolition waste generated is estimated to be approximately 70,449 cubic yards with the major portion being generated in FY 2009. Demolition contractors would be directed to mulch or recycle materials to the maximum extent possible, thereby reducing the amount of demolition debris disposed in landfills. Based on the Cannon AFB FY 03 experience, approximately 47.6 percent of the demolition materials generated by the WINDO projects would be recycled. Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes, such as the Cannon AFB Recycling Center and Clovis Regional Landfill. In the peak year of FY 09, an estimated 14,222 cubic yards of debris waste would be hauled to the landfill. This would represent approximately one-third the volume of comparable wastes in FY 03. The amount of waste generated by the Proposed Action would not have a significant impact to the operating life of the landfill. No significant environmental consequences would result from the implementation of the Proposed Action.

ENVIRONMENTAL RESTORATION PROGRAM

Construction and demolition associated with projects contained within the WINDO would occur on or near ERP Sites LF-25, SD-15, SD-17, SD-20, SS-19, and WP-14. The base ERP office, 27 CES/CEVC, would request an ACC waiver to construct on or near an ERP site. Any soil suspected of contamination, as discovered during the development processes, would be tested

and disposed of in accordance with proper NMED regulations. Disposal of contaminated soil would be funded by this development project.

4.8.3 No-Action Alternative

Under the No-Action Alternative, construction and demolition of the project included within the WINDO EA would not occur. Management of hazardous wastes or materials would continue under existing Cannon AFB programs and there would be no environmental consequences to these resources.

4.9 SAFETY

4.9.1 Methodology

Safety impacts would be significant if implementation of the Proposed Action were to render existing installation facilities incompatible with safety criteria (e.g., clear zones). QD arcs and Accident Potential Zones (APZs) were reviewed against the proposed construction new land uses for compatibility determination.

4.9.2 Proposed Action

GROUND SAFETY

There would be no significant impact to ground safety as a result of construction and demolition activities. All activities and workers at the construction site would comply with OSHA standards and would be required to conduct construction activities in a manner which would not pose any risks to personnel at or near the construction site.

EXPLOSIVE SAFETY

The proposed construction is compatible with existing land uses and is located outside of munitions QD arcs. As no explosives would be used or handled during construction activities, no additional risk is expected from the Proposed Action.

ACCIDENT POTENTIAL ZONES

A comparison of the lack of the project actions on Cannon AFB and MAFR was compared with APZs at Cannon AFB and munitions delivery data at MAFR. Tables 4-7 through 4-9 shows compares the WINDO projects with the safety information from Chapter 3.0. The WINDO projects are compatible with both the published APZs and the QD.

**Table 4-7. APZ Compatibility with the Proposed Action,
Short Range Projects at Cannon AFB**

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Compatibility</i>
939057	05	Raw Water Distribution System	Repair and upgrade	Compatible
030145	06	Entomology Shop	Add/alter	Compatible
993002	06	AGE Complex	New construction	Compatible
053001	06	Fill Stands	New construction	Compatible

**Table 4-8. APZ Compatibility With the Proposed Action,
Long Range Projects at Cannon AFB**

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Compatibility</i>
053002	09	Dining Hall and Airman's Center	New construction	Compatible
063002	09	Communications Facility	New construction	Compatible
043001	09	Base Library and Education Center	New construction	Compatible
053003	10	Fitness Center	New construction	Compatible
033002	10	Transportation Complex	New construction	Compatible
063003	10	Lodging Office and DV Suites	New construction	Compatible
033003	11	CE Pavements and Equipment Shop	New construction	Compatible

**Table 4-9. APZ Compatibility With the Proposed Action,
Short Range Projects at MAFR**

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	<i>Compatibility</i>
030121	04	Range Control Tower	New construction	Compatible
020131	05	Range Control Building	New construction	Compatible
980008	05	Fire Station 3	Expansion	Compatible

4.9.3 No-Action Alternative

Under the No-Action Alternative, construction and demolition of the project included within the WINDO EA would not occur. Management of explosives and munitions would continue under existing Cannon AFB programs and there would be no environmental consequences to this resource.

4.10 NOISE

4.10.1 Methodology

Noise impact analyses typically evaluate potential changes to existing noise environments resulting from the proposed construction and demolition activities. This consists of changes in noise levels or the exposed human population, as well as noise impacts on wildlife. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels).

4.10.2 Proposed Action

Land use compatibility guidelines established by HUD and based on findings of the FICON recommend acceptable levels of noise exposure for various types of land uses. These include encouraging compatible land use planning and land use patterns for housing and other sensitive areas. Noise impacts were evaluated quantitatively for the Proposed Action and the No-Action Alternative against these acceptable noise levels for evaluation.

Table 4-10 describes the noise ranges for different construction equipment likely to be used during construction of WINDO facilities. Noise generated from construction activities are not expected to affect workers safety. Noise is expected to occur during work days and be short term. Although construction noise could result in some disturbance or transitory annoyance, it would not have either a long term or a significant environmental impact.

The proposed projects would be located in noise compatible areas for their particular land use. Tables 4-11 through 4-13 shows the compatibility of the proposed construction projects within the noise environment.

Table 4-10. Construction-Equipment Noise Ranges

			Noise level at 50 ft, dBA					
			60	70	80	90	100	110
Equipment powered by internal combustion engines	Earth-Moving	Compactors (rollers)						
		Front Loaders						
		Backhoes						
		Tractors						
		Scrapers, graders						
		Pavers						
		Trucks						
	Materials handling	Concrete mixers						
		Concrete pumps						
		Cranes, movable						
		Cranes, derrick						
	Stationary	Pumps						
		Generators						
		Compressors						
Impact equipment	Pneumatic wrenches							
	Jackhammers and rock drills							
	Impact pile drivers, peaks							
Other	Vibrator							
	Saws							

Source: USEPA 1978.

Notes: Based on limited available data samples; ft = feet; dBA = A-weighted decibel scale

Table 4-11. Short-Range WINDO Construction Projects at Cannon AFB, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	NOISE CONTOURS				<i>Compatibility</i>
				<i>65db</i>	<i>70db</i>	<i>75db</i>	<i>80db</i>	
939057	05	Raw Water Distribution System	Repair and upgrade			X		Compatible
030145	06	Entomology Shop	Add/alter		X			Compatible
993002	06	AGE Complex	New construction		X			Compatible
053001	06	Fill Stands	New construction		X			Compatible

Table 4-12. Long-Range WINDO Construction Projects at Cannon AFB, FY 08-11

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	NOISE CONTOURS				<i>Compatibility</i>
				<i>65db</i>	<i>70db</i>	<i>75db</i>	<i>80db</i>	
053002	09	Dining Hall and Airman's Center	New construction	X				Compatible
063002	09	Communications Facility	New construction		X			Compatible
043001	09	Base Library and Education Center	New construction	X				Compatible
053003	10	Fitness Center	New construction		X			Compatible
033002	10	Transportation Complex	New construction		X			Compatible
063003	10	Lodging Office and DV Suites	New construction	X				Compatible
033003	11	CE Pavements and Equipment Shop	New construction		X			Compatible

Table 4-13. Short-Range WINDO Construction Projects at MAFR, FY 04-07

<i>Project Number</i>	<i>FY</i>	<i>Project Title</i>	<i>Action</i>	NOISE CONTOURS				<i>Compatibility</i>
				<i>65db</i>	<i>70db</i>	<i>75db</i>	<i>80db</i>	
030121	04	Range Control Tower	New construction	<65				Compatible
020131	05	Range Control Building	New construction	<65				Compatible
980008	05	Fire Station 3	Expansion	<65				Compatible

4.10.3 No-Action Alternative

Under the No-Action Alternative, construction and demolition of the project included within the WINDO would not occur. Noise levels would continue under existing conditions and there would be no impact from this resource.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

CEQ regulations stipulate the cumulative effects analysis in an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7).

The first step in assessing cumulative effects involves defining the scope of other actions and their interrelationship with the proposed action or alternatives (CEQ 1997). The scope must consider other projects which coincide with the location and timetable of the proposed action and other actions. Cumulative effects analysis evaluates the interactions of multiple actions.

5.1.1 Past, Present, and Reasonably Foreseeable Actions

Recent past and ongoing military actions at Cannon AFB and MAFR were considered as part of the baseline conditions in the ROI. These include the following:

- Joint Training Exercise Roving Sands (USACE 1994).
- Proposed Force Structure Changes and Related Actions at Cannon AFB New Mexico (Air Force 1995).
- Proposed Force Structure and Foreign Military Sales Actions (Air Force 1998b).
- Realistic Bomber Training Initiative (RBTI) (Air Force 2000).
- Defensive Training Initiative (DTI) (Air Force 2001).
- Use of White Phosphorus Rockets at Melrose Air Force Range New Mexico (Air Force 2003b).
- Military Family Housing Demolition, Construction, Renovation and Leasing Program, EA (Air Force 2003c).

None of the above actions would change if the WINDO projects were implemented. Joint Training Exercise Roving Sands is an annual air-defense exercise in New Mexico and Texas, sponsored by the United States Army. This exercise has included Cannon-managed airspace and aircraft in the past and may occur in the future. RBTI links military airspace and ground-based training in support of aircrews from Barksdale AFB and Dyess AFB. Past force-structure changes are incorporated into this EA as baseline conditions. DTI approved the use of chaff and flare in Cannon airspace, while the use of white phosphorus rockets is restricted to MAFR.

Cannon AFB is involved in the Air Force Housing Privatization Initiative. Currently, a contract to award this project is expected in early 2005. The contractor for this project will manage, upgrade, demolish, and construct family housing units for Cannon AFB over a 50 year period.

Initial upgrades, demolition, and construction for this project are expected to be completed in 2010 or 2011.

A Utilities Privatization Initiative also is underway for natural gas and wastewater systems on Cannon AFB. Contracts currently are out for bid with awards anticipated mid-year 2005. As a consumer of utility services, Cannon AFB would not experience any effects due to privatization. The utility contractors would be responsible for operating and maintaining systems as they are currently, with upgrades to the systems occurring as needed.

The Air Force is currently proposing the New Mexico Training Range Initiative (Air Force 2004). The proposal includes an expansion and modification of airspace used by Cannon aircrews, and proposes to authorize supersonic flight above 10,000 feet above ground level. This Environmental Impact Statement is currently in the draft stage. NMTRI does not involve any changes to the airspace or airspace uses above MAFR, nor does it include any actions at Cannon AFB.

As an active military installation, Cannon AFB undergoes changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances. Any future changes impacting environmental resources would receive appropriate environmental analysis. Like any other major institution (e.g., university, industrial complex), Cannon AFB requires new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repairs. Although such construction and upgrades are a part of this WINDO EA, future requirements cannot be predicted.

5.1.2 Cumulative Effects Analysis

Land Use. The proposed WINDO projects were sited to ensure compatibility with the existing Base Master Plan and to consolidate similar land uses (e.g., the co-location of facilities with similar functions or purposes). Implementation of the Proposed Action would, therefore, also facilitate future planning.

Infrastructure. Demolition projects associated with the Proposed Action would contribute solid waste to the local landfill. Although the amount of generated waste would not have a significant impact to the landfill, this project, in conjunction with future unknown projects, could shorten the operating life of the landfill.

Socioeconomics and Environmental Justice. Employment benefits are temporary.

Cultural Resources. The Proposed Action would not impact cultural resources at Cannon AFB or MAFR; therefore, no cumulative effects would be expected.

Biological Resources. No special-status species or wetlands would be affected by the Proposed Actions; therefore, no cumulative effects would be expected.

Physical Resources. The Proposed Action, in association with the Cannon Housing Privatization Project, could have cumulative effects on physical resources at Cannon AFB. However, proper construction techniques, erosion control measures, and structural engineering designs for these projects would minimize cumulative impacts to physical resources, such as soil and water quality.

Air Quality. The Proposed Action, in association with the Cannon Housing Privatization Project, would contribute additional pollutants to regional air quality; however, the increase in emissions would be temporary and would be spread over several calendar years. After construction, new facilities would not be expected to contribute emission levels above those of the current facilities.

Hazardous Materials and Waste Management. The Proposed Action, in association with the Cannon Housing Privatization Project, could contribute to cumulative effects associated with the disposal of hazardous materials, such as asbestos and lead. All projects at Cannon AFB will follow federal and state regulations for the handling and disposal of such materials, thus minimizing cumulative effects.

Safety. All activities associated with the Proposed Action will follow OSHA standards. Implementation of the Proposed Action would not result in any cumulative effects to base personnel.

Noise. The Proposed Action, in association with the Cannon Housing Privatization Project, would contribute to an increase in base noise levels; however, the increase in noise would be temporary and would be spread over several calendar years. Furthermore, none of the Cannon WINDO projects are located near the housing area, resulting in noise impacts being spread across the base.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA CEQ regulations require environmental analyses to identify “...any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented” (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) which cannot be replaced within a reasonable time frame. Building construction material such as gravel and the gasoline usage for construction equipment would constitute the consumption of non-renewable resources. These resources are currently plentiful in New Mexico and would not expect to significantly affect environmental resources.

6.0 REFERENCES

- AFIOH/RSEQ. 2003. 2002 Air Emissions Inventory for Cannon Air Force Base, NM. Air Quality Branch, Environmental Analysis Division, Air Force Institute for Operational Health (AFIOH/RSEQ), Brooks AFB, Texas. May 2003.
- Brown, D.E. 1994. Biotic Communities: Southwestern United States and Northwestern Mexico. University of Utah Press, Salt Lake City, Utah.
- Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Council on Environmental Quality, Executive Office of the President.
- DeBruin, E., D. Bleakly, and S. Radjy. 1995. Floristic Survey of Cannon Air Force Base and Melrose Air Force Range, New Mexico. New Mexico Natural Heritage Program, Albuquerque, New Mexico.
- Dick-Peddie, W.A. 1993. New Mexico Vegetation: Past, Present, and Future. University of New Mexico Press, Albuquerque, New Mexico.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Waterways Experiment Station Technical Report Y-87-1, Vicksburg, Mississippi.
- Federal Interagency Committee on Noise (FICON). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues.
- Giesen, K.M. 1998. Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*). In The Birds of North America, No. 364, A. Poole and F. Gill, editors. The Birds of North America Inc., Philadelphia, Pennsylvania.
- Jagielski, K. and O'Brien, J. 1994. Calculations Methods for Criteria Air Pollution Emission Inventories. USAF, Armstrong Laboratory, AL/OE-TR-1994-0049. Brooks AFB.
- LSA Associates, Inc. 2002. *NOISE*. Livermore General Plan Update Working Paper. Berkeley, California. July 23, 2002
- Massey, M. 2001. Long-Range Plan for the Management of Lesser Prairie Chickens in New Mexico: 2002-2006. New Mexico Department of Fish and Game.
- National Oceanic and Atmospheric Administration. 1998a. Climatic Wind Data for the United States. National Climatic Data Center, National Oceanic and Atmospheric Administration, November 1998.
- _____. 1998b. National Virtual Data System, Comparative Climatic Data for the United States Through 1998. National Oceanic and Atmospheric Administration.

- Natural Resources Conservation Service (NRCS). 1997. National Map Unit Interpretation Record (MUIR). United States Department of Agriculture.
<http://soils.usda.gov/soils/survey/nmuir/index.html>.
- _____. 1998. Clovis Series. Official Soil Series Description. United States Department of Agriculture. October.
<http://soils.usda.gov/soils/technical/classification/osd/index.html>.
- _____. 1999. Amarose Series. Official Soil Series Description. United States Department of Agriculture. May.
<http://soils.usda.gov/soils/technical/classification/osd/index.html>.
- _____. 2004. Springer Series. Official Soil Series Description. United States Department of Agriculture. May.
<http://soils.usda.gov/soils/technical/classification/osd/index.html>.
- New Mexico Air Quality Bureau (NMAQB). 2003. Air Quality Bureau Permitting Section. Last Updated 3/20/2003. Accessed April 2003.
<http://www.nmenv.state.nm.us/aqb/permit/index.html>
- New Mexico Department of Environmental Improvement. 2002. Ambient Air Quality Standards, Air Quality Regulations, Title 20, Chapter 2, Part 3. Downloaded from the Internet on 6/7/2004,
http://www.nmenv.state.nm.us/aqb/regs/20.2.03nmac_103102.pdf. Website dated 10/31/2002.
- New Mexico Department of Game and Fish (NMDGF). 2002a. Draft: Threatened and Endangered Species of New Mexico, Biennial Review and Recommendations. New Mexico Department of Game and Fish, Conservation Services Division.
- _____. 2002b. Biota Information System of New Mexico (BISON-M): Species Accounts. Available at <http://www.gmfish.state.nm.us>. Accessed February 4, 2004.
- _____. 2003. Biota Information System of New Mexico (BISON-M): New Mexico Species of Concern. Available at <http://www.gmfish.state.nm.us>. Accessed February 4, 2004.
- New Mexico Environment Department (NMED). 2000. Solid Waste in New Mexico. December 2000.
- New Mexico Natural Heritage Program (NMNHP). 2003. Species Information. New Mexico Natural Heritage Program Biological and Conservation Data System, internet version updated November 7, 2003, <http://nmnhp.unm.edu/query-bcd/query.html>, New Mexico Natural Heritage Program, Department of Biology, University of New Mexico, Albuquerque, New Mexico. Accessed January 27, 2004.

- New Mexico Rare Plant Technical Council (NMRPTC). 1999. New Mexico Rare Plants. Albuquerque, New Mexico: New Mexico Rare Plants Home Page, <http://nmrareplants.unm.edu> (version 15 March 2002). Accessed January 26, 2004.
- New Mexico Water Quality Control Commission (NMWQCC). 2002a. New Mexico Water Quality Control Commission Regulations. 20.6.2. NMAC.
- _____. 2002b. Water Quality and Water Pollution Control In New Mexico, 2002. A State Report Required by the U.S. Congress Under §305(b) of the Clean Water Act. New Mexico Environment Department. Santa Fe, New Mexico. February.
- North Plains Groundwater District. 2004. .Ogallala Aquifer. <http://www.npwd.org/Ogallala.htm>. Dumas, Texas.
- O'Brien, R.J. and M.D. Wade. 2002. Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations. Air Force Institute for Environment, Safety, and Occupational Health Risk Analysis. IERA-RS-BR-SR-2001-0010. Brooks Air Force Base, Texas. January.
- Parmenter, R.R., E. Muldavin, T.L. Yates, J.N. Stuart, G.H. Farley, and T. Maddux. 1994. A Biological Survey of Melrose Air Force Range, Melrose, New Mexico. Department of Biology and New Mexico Natural Heritage Program, University of New Mexico, Albuquerque, New Mexico
- South Coast Air Quality Management District. 1993. CEQA Air Quality Handbook.
- United States Air Force (Air Force). 1995. Final Environmental Assessment of the Proposed Force Structure Changes and Related Actions at Cannon Air Force Base, New Mexico.
- _____. 1996. Delineation of Waters of the United States, Including Wetlands, on Cannon Air Force Base and Melrose Air Force Range, New Mexico: Final Report. Prepared for Air Combat Command, Langley Air Force Base, Virginia.
- _____. 1997. Integrated Natural Resources Management Plan at Cannon AFB, New Mexico.
- _____. 1998a. Final: Endangered, Threatened, and Candidate Species and Species of Concern Survey Report, Cannon Air Force Base, New Mexico. Prepared for Air Combat Command, Langley Air Force Base, Virginia.
- _____. 1998b. Final Environmental Assessment for Proposed Force Structure and Foreign Military Sales Actions at Cannon Air Force Base, New Mexico.
- _____. 1999. Air Force Handbook 32-7084. March 1999.
- _____. 2000. Realistic Bomber Training Initiative, Final Environmental Impact Statement. Prepared for Air Combat Command, Langley AFB, Virginia.

- _____. 2001. Final Environmental Assessment for the Defensive Training Initiative, Cannon Air Force Base, New Mexico.
- _____. 2002a. Cannon Air Force Base General Plan. 27th Fighter Wing. Cannon Air Force Base, New Mexico. June 2002.
- _____. 2002b. Cannon Air Force Economic Impact Assessment. 27th Fighter Wing, Office of Public Affairs, Cannon Air Force Base, New Mexico. Fiscal Year 2002.
- _____. 2003a. Cannon Air Force Base Fact Sheet. 27th Fighter Wing Office of Public Affairs, Cannon Air Force Base, New Mexico. February 2003.
- _____. 2003b. Environmental Assessment for the Use of White Phosphorus Rockets at Melrose Air Force Range, New Mexico.
- _____. 2003c. Military Family Housing Demolition, Construction, Renovation and Leasing Program, EA, October 2003.
- _____. 2004. Preliminary Draft Environmental Impact Statement: New Mexico Training Range Initiative. Prepared for Air Combat Command, Langley AFB, Virginia.
- United States Army Corps of Engineers (USACE). 1994. Final Programmatic EIS for the Joint Training Exercise Roving Sands at Fort Bliss, Texas and New Mexico and White Sands Missile Range, New Mexico. Fort Worth District, Fort Worth, Texas.
- _____. 1995. Biological Survey Report: North Playa Lake, Cannon Air Force Base, New Mexico. U.S. Army Corps of Engineers, Fort Worth District. Prepared for U.S. Air Force, Cannon Air Force Base.
- _____. 1996. Biological Survey of Cannon Air Force Base, New Mexico, with Emphasis on Potential Occurrence of Endangered, Threatened, Candidate, and Sensitive Species. Prepared for Air Combat Command, Langley Air Force Base, Virginia.
- United States Bureau of Economic Analysis. 2003. Regional Economic Information System: BearFacts 1999-2000. Geographic areas: New Mexico, Curry County, Roosevelt County. <http://www.bea.doc.gov/bean/regional/bearfacts/>
- United States Census Bureau. 2000a. Census 2000 Table DP-1. Profile of General Demographic Characteristics: 2000. Geographic areas: New Mexico, Curry County, Roosevelt County. <http://quickfacts.census.gov/>
- _____. 2000b. Census 2000 Summary File 1. Population, Housing Units, Area, and Density: 2000. Geographic area: New Mexico Counties. <http://factfinder.census.gov/>

- United States Department of Agriculture-Soil Conservation Service (SCS). 1980. Major Land Resource and Subresource Areas, New Mexico. Map and subresource area descriptions. June.
- United States Environmental Protection Agency (USEPA). 1978. Part 58 Appendix D: 40 Code of Federal Regulations. Chapter One. Protective Noise Levels – Condensed Version of EPA Levels Document.
- _____. 2003. 1999 National Emission Inventory. Database downloaded from USEPA website on 11/25/2003, <http://www.epa.gov/ttn/chief/net/1999inventory.html>.
- _____. 2004a. Designation of Air Quality Control Regions. Code of Federal Regulations, Title 40: Protection of Environment, Part 81 – Designation Of Areas For Air Quality Planning Purposes, Subpart B – Designation of Air Quality Control Regions, Section 81.242 Pecos-Permian Basin Intrastate Air Quality Control Region. Downloaded from the Internet, <http://www.epa.gov/epacfr40/chapt-I.info/chi-toc.htm> on 6/8/2004.
- _____. 2004b. 8-Hour Ground Level Ozone Designations; Region 6, State Designations. USEPA Office of Air Quality Planning and Standards. Downloaded from the Internet, <http://www.epa.gov/ozonedesignations/regions/region6desig.htm>, on 4/16/2004.
- _____. 2004c. PM2.5 Designations; Region 6 Recommendations and USEPA Responses. USEPA Office of Air Quality Planning and Standards. Downloaded from the Internet, <http://www.epa.gov/pmdesignations/regions/region6.htm>, on 4/16/2004.
- United States Fish and Wildlife Service (USFWS). 2000. Endangered and Threatened Wildlife and Plants; 12-month Finding for a Petition to List the Black-tailed Prairie Dog as Threatened. Federal Register 65(24):5476-5488.
- _____. 2003a. Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C.
- _____. 2003b. Endangered and Threatened Wildlife and Plants; Withdrawal of the Proposed Rule to List the Mountain Plover as Threatened. Federal Register 68(174):53083-53101.
- Western Regional Climate Center. 2003. Historical Climate Information: Average Wind Speed. Based on data from 1992-2002. <http://www.wrcc.dri.edu/htmlfiles/westwind.html>, website accessed on 4/11/2003.

Persons and Agencies Contacted

Cass, Dan. 2003. Community Planner, Cannon AFB, New Mexico.

Chandler, Richard L. 2004. Cultural Resources Program Manager, Cannon AFB, New Mexico.

Crow, Rick. 2003. Chief, Resources Section, Cannon AFB, New Mexico.

Davis, Dave. 2004. Biologist, Cannon AFB, New Mexico.

Givens, Carla. 2003. Solid Waste Program Manager, Cannon AFB, New Mexico.

Hamilton, Bill. 2003. Special Program Manager, Cannon AFB, New Mexico.

Long, Marianne. 2003. Air Quality Program Manager, Cannon AFB, New Mexico.

Rierson, Mike. 2003. EIAP Project Manager, Cannon AFB, New Mexico.

Sears, Pat. 2003. Project Controller, Cannon AFB, New Mexico.

Smith, Gene. 2004. Tanks Program Manager, 27 CES/CEV, Cannon AFB, New Mexico.

Timmons, Denny. 2003. Chief, Compliance Section, Cannon AFB, New Mexico.

Wright, Belinda. 2003. Real Property Officer, Cannon AFB, New Mexico.

Zamie, Pete. 2003. Installation Restoration Program Manager, Cannon AFB, New Mexico.

7.0 LIST OF PREPARERS

Ellen Dietrich, Physical Resources

B.A., Anthropology, University of Illinois, 1971

Years of Experience: 28

David M. Dischner, Program Manager and Quality Assurance

B.A., Urban Affairs, Virginia Polytechnic Institute and State University, Blacksburg, 1974

Hazardous Materials Management Certificate, University of California, Riverside, 1988

Years of Experience: 30

Claudia Druss, Senior Archaeologist

B.A., University of Colorado, 1977

M.A., Anthropology, Idaho State University, 1980

Years of Experience: 23

Michele A. Fikel, Project Manager

B.A., Geography, University of California, Santa Barbara, 1985

Years of Experience: 16

Kimberly Freeman, Production Manager

Years of Experience: 19

Irene Johnson, Socioeconomics and Environmental Justice

B.S., Economics, George Mason University, 1989

M.A., Economics, University of Washington, 1991

Years of Experience: 14

Claudia Laughlin, Graphics

Years of Experience: 9

David Lingner, Air Quality, SAIC

B.S., Chemistry & Mathematics, Bates College, 1978

Ph.D., Chemistry, Purdue University, 1985

Years of Experience: 21

Ann Moser, Biological Resources

B.A., Biology, Washington University, 1987

M.S., Wildlife Resources, University of Idaho, 1996

Certified Wildlife Biologist, The Wildlife Society, 2002

Years of Experience: 12

Kristi Regotti, Environmental Specialist

B.S., Political Science, Boise State University, 2001

M.P.A., Environmental and Natural Resource Policy, Boise State University, 2003

Years of Experience: 3

Kathleen Sherwood, Environmental Analyst

Years of Experience: 2

Robert E. Van Tassel, Quality Assurance

B.A., Economics, University of California, Santa Barbara, 1970

M.A., Economics, University of California, Santa Barbara, 1972

Years of Experience: 32



Wing Infrastructure Development Outlook



Contract

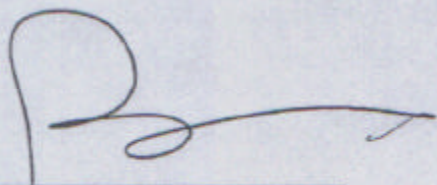
The following is the vision statement for *Cannon AFB*:

The 27th Fighter Wing's Strategic Plan for 2003 provides the current vision and Wing strategy for achieving specific goals and objectives through the year 2003. This plan will be updated/revised when the 27th FW senior leadership determines that such action is necessary.

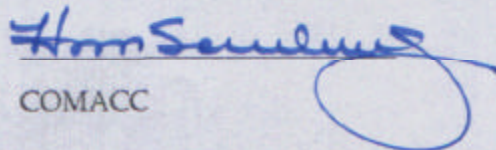
The vision statement of the "World's Most Lethal Wing" is:

The 27th Fighter Wing, the world's best at Air Force competencies: flying and fixing airplanes, getting to the fight and taking care of it's people and their families. We are the Wing-of-Choice when our nation calls 911 for lethal warfighters to apply combat power anywhere, anytime. We are the --"Worlds Most Lethal Warfighting Team!"

Plans in this document will achieve the Cannon AFB vision. Project lists for all major investment programs are included. Installation vision or project changes must be in accordance with Wing Infrastructure Development Outlook (WINDO) guidance.



Wing Commander, Cannon AFB



COMACC

Contents — Cannon Air Force Base WINDO

1.0	Vision Statement, Goals and Objectives	
1.1	Wing Mission	1
1.2	Installation Vision & Goals	1
1.3	Installation Development Vision & Goals	1
2.0	Existing Conditions and Analysis	
2.1	Facilities	3
2.2	Infrastructure Systems	3
2.3	Land Use	4
2.4	Constraints to Development	4
	Exhibit 2.4 Constraints Map, BCP Map D-6	
3.0	Investment Strategy	
3.1	Future Development Issues	5
3.2	Major Investment Strategies	5
3.3	Future Land Use	5
	Exhibit 3.3 Future Land Use Map, BCP Map D-1.1	6
4.0	Future Investment and Project Locations	
4.1	Project Lists and Sitings	7
4.1.1	Sustainment	7
4.1.2	Restoration and Modernization	7
4.1.3	Military Construction (MILCON)	8
4.1.4	Environmental O&M	9
4.1.5	Environmental Restoration Account	9
4.1.6	Housing O&M	9
4.1.7	Housing MILCON	10
4.1.8	Non-Appropriated Fund	10
4.1.9	Army Air Force Exchange Service (AAFES)	10
4.1.10	Defense Energy Systems Command (DESC)	10
4.1.11	Anti-Terrorism/Force Protection	11
4.1.12	Airfield Obstruction Reduction Initiative (AORI)	11
	Exhibit 4.1 Short Range Development Plan, BCP Map M-2	

1.0 Vision Statement, Goals and Objectives

1.1 Wing Mission

Current Wing Mission

Cannon is the home of the famous 27th Fighter Wing. Its primary mission is to maintain an F-16 *“Fighting Falcon”* fighter wing capable of day and night combat operation for warfighting commanders worldwide at any time. The wing stands ready to go wherever needed to do America’s business and do it with precision, day or night, whenever called.

Future Wing Mission

The 27th Fighter Wing is currently posturing itself to execute our mission well into the 21st century. The 27 FW and Cannon AFB are ready for any and all missions it is called on to perform with the Air Force’s premier fighter aircraft.



1.2 Installation Vision & Goals

The vision statement of the “World’s Most Lethal Wing” is:
The 27th Fighter Wing, the world’s best at Air Force competencies: flying and

fixing airplanes, getting to the fight and taking care of its people and their families.

We are the Wing-of-Choice when our nation calls 911 for lethal warfighters to apply combat power. We are the ---“Worlds Most Lethal Warfighting Team.”

The goals of the “World’s Most Lethal Wing” are:

- Be the world’s best at flying and fixing airplanes
- Take care of Cannon Warriors and Families
- Be the world’s best at deploying mission ready warriors and equipment
- Plan for the long-term capabilities of Cannon AFB

1.3 Installation Development Vision & Goals

Installation Development Vision

The development vision for Cannon AFB is derived from the Wing vision and goals. This vision responds to current needs, and anticipated future Air Force requirements and initiatives. The development vision for Cannon AFB is to:

Maintain, revitalize, and expand facilities to support 21st Century Air Force missions that play a predominant role in protecting and preserving the national interests of the United States of America. It is imperative that we recognize our goals and objectives and develop built-in flexibility to support changing requirements.

Installation Development Goals

Goal 1: Plan for growth.

Continue to posture for new systems and missions.

- Evaluate the capacity of Cannon AFB to accommodate future missions

- Continually assess the Airfield and Aircraft Operations and Maintenance Facilities—maintain and upgrade as necessary to maintain/improve primary mission effectiveness

Goal 2: Ensure total execution of resource stewardship responsibilities.

- Ensure installation operations and development activities continue to be sensitive to environmental impacts, and comply with the *National Environmental Policy Act (NEPA)*
- Improve installation security and force protection
- Continue to support Air Combat Command (ACC) goals for reduction of operating costs by identifying, eliminating and mitigating waste in man-hours, material, and movement
- Investigate privatization initiatives
- Continue an active facility demolition policy

Goal 3: Promote land use and airspace compatibility.

Promote on and off-base land use and airspace compatibility within areas that may be affected by base development and/or operations.

- When feasible, co-locate operations, logistics, support, security, and communications facilities
- Establish compatible land use areas for related activities
- Site facilities for maximum efficiency by locating similar functions in close proximity to each other
- Ensure participation from all affected base functional areas in the planning and facility development process

Goal 4: Enhance quality of life (QOL).

Promote the public health, safety, welfare, and overall quality of life.

- Improve installation security and safety by ensuring compliance with required Force Protection Standards
- Upgrade Cannon AFB Community Commercial and Community Service facilities
- Continue the renovation of enlisted dormitories
- Use the housing privatization initiative to refurbish and upgrade older Military Family Housing (MFH) to current whole house standards
- Maintain ongoing tree replacement and landscaping programs
- Ensure compliance with the ACC architectural and landscaping guidelines

2.0 Existing Conditions and Analysis

2.1 Facilities

The existing inventory of facilities is currently meeting mission needs, with minor exceptions currently being addressed. The primary focus of the 27 FW revolves around upgrading the quality of existing building by one of two means: renovation or replacement. As long as the mission requirements remain relatively unchanged, there is little chance of developing completely new facility requirements.

Airfield Facilities

The Airfield Pavement at Cannon AFB currently meets the mission requirements. This has been achieved as a direct result of the investments made in repairing and maintaining the airfield and the 27 FW will continue to do so.

Military Family Housing

MFH facilities will be privatized by May 04, with the exception of 801 leased housing in Clovis & Portales. This is a long-range solution to funding problems and long lead times typically faced by bases around the world.

2.2 Infrastructure Systems

The infrastructure systems at Cannon AFB are well developed and managed by the 27 FW. Cannon AFB is completely independent of outside water sources due to its unique ability to provide potable and non-potable water from nine government owned wells. The importance of this fact has rapidly increased with the current drought

conditions in New Mexico. Through maintaining these wells and mandating strict xeriscaping standards, the 27 FW is providing a positive impact on a topic of major concern in the local area. Summer water usage demand peaks at about 88% of overall pumping capacity. Sewage treatment is also performed within the confines of the base. All water and wastewater treatment services are performed with in house personnel or contracted operations. There is adequate capacity to support both current demand and future expansion in mission. The entire irrigation of the base golf course is provided by reutilizing wastewater, further amplifying the water conservation efforts at Cannon AFB. Electrical power is delivered to Cannon AFB to a 25MW substation located within the base by two distinct high voltage lines converging on the edge base boundary. Demand on the substation is currently 58% of capacity, leaving room to grow. Natural gas is provided to the base through one single metering point located on base property. Underground natural gas distribution polyethylene lines range from 2 - 6 inches in diameter. Essentially, there is no limit to the amount of natural gas service supplied to the base through contractual means. Storm drainage systems are adequate to handle most storms either in the winter or summer. Cannon's roads and parking lots have not been repaired in the last few years because other, higher priority requirements have exhausted available funds. This has left several major areas in poor condition and in need of repair. This trend changed in FY03. We started executing pavement repairs and as additional funds become available,

Cannon AFB will emphasize roads and parking lot repair and maintenance. The liquid fuels distribution system is currently scheduled for complete replacement under a Defense Energy Systems Command (DESC) funded military construction (MILCON) project. Three of the base elevated water storage tanks are scheduled to be consolidated and modernized as a part of the water distribution renovations scheduled for FY06.

2.3 Land Use

Historical Land Use

Existing land use patterns on Cannon AFB have evolved over time as missions and requirements changed. As development continued, facilities and activities were systematically located to promote ideal functional relationships. There are a few examples of incompatible uses that have resulted from such considerations as a rapid requirement for a specific facility, the lack of funding for new construction, and the reuse of under utilized or vacant buildings. Although there are a few incompatible uses, overall, functional relationships and land use on Cannon AFB are generally consistent with the criteria set forth in the Cannon AFB General Plan.

Surrounding Area

The land and communities adjacent to Cannon AFB are primarily related to the agricultural industry, in one form or another. A few of the main industries found within the locality of Cannon AFB are dairy production, cattle ranching and farming (peanuts, potatoes, milo, etc). With the exception of US Highway 60-84, there are no major traffic routes near the base. The benefits of being located in a remote area of the eastern plains of New Mexico manifest themselves in the form of

extremely limited air encroachments. This is a key factor in sustaining the mission of training the "Most Lethal Warfighting Team."

2.4 Constraints to Development

Constraints to future development include both built and environmental features. Built constraints that affect future base development include airfield clearances, Air Installation Compatible Use Zone (AICUZ) noise recommendations, quantity/distance (Q/D) explosive safety zones, and potential historic sites. Environmental constraints to base development may include Installation Restoration Program (IRP), Solid Waste Management Unit (SWMU) sites, landfills, flood plains, endangered species and wetlands. (See the Composite Constraints Map, Figure 4A-5 from the Cannon General Plan).

Built Constraints

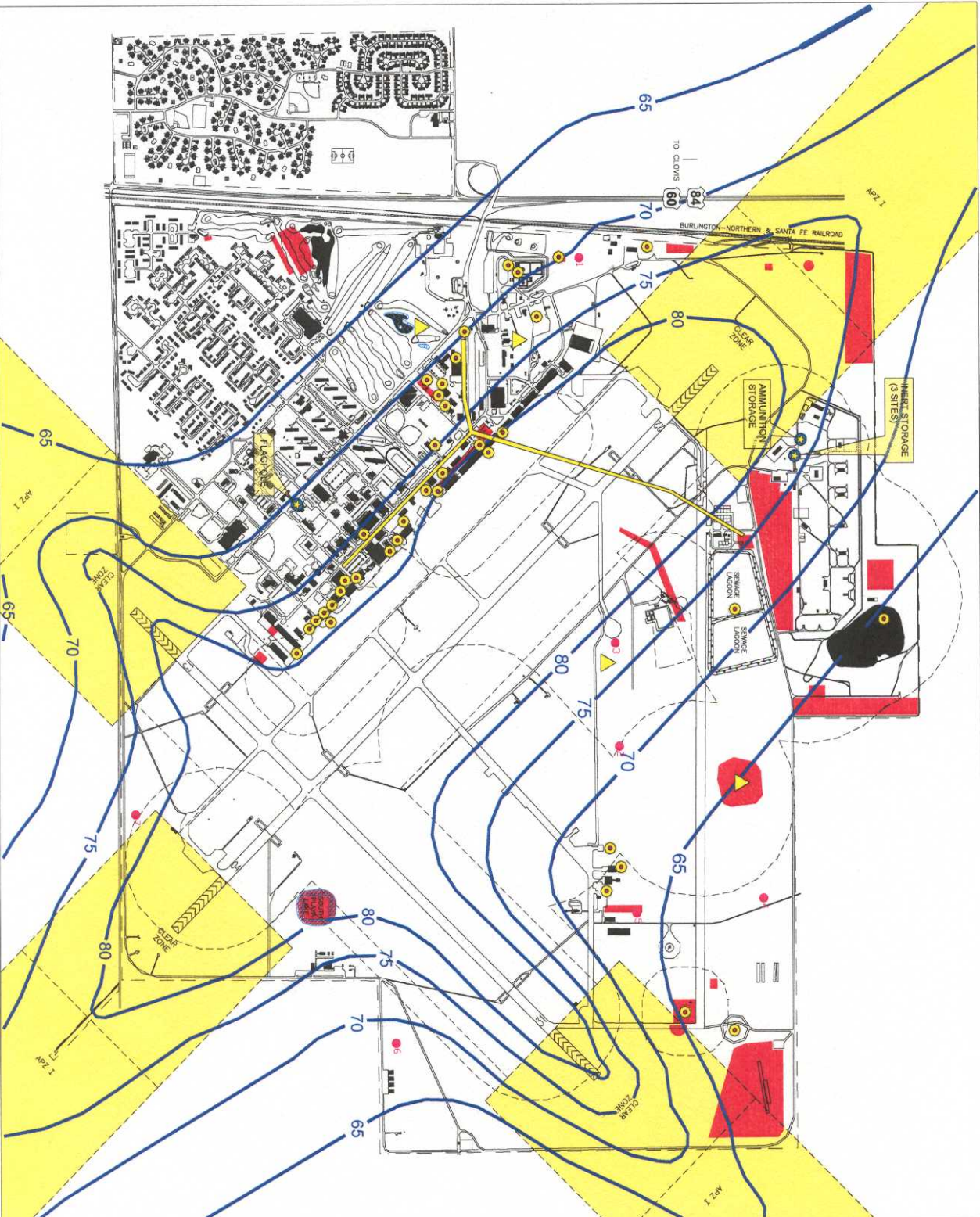
Built constraints to new development are encountered in the following zones/sites:

- AICUZ – Discourages development in areas where high noise levels may affect the proposed user
- Accident Potential Zones (APZs) – Discourages development in areas where the greatest chance of aircraft accidents exist
- Explosive Safety Zones – Dictates restricted use of areas surrounding munitions areas, hot cargo pads, and other explosive sensitive areas

Environmental Constraints

New construction is constrained by the following environmental issues:

- Avoid IRP and SWMU sites until remedial actions have been taken
- Avoid developing in flood plain and wetland areas



LEGEND

- INSTALLATION BOUNDARY
- WETLANDS
- EXPLOSIVES SAFETY CLEAR ZONE
- ACCIDENT POTENTIAL AND CLEAR ZONES
- AIRFIELD CLEARANCE AND IMAGINARY SURFACE
- IRP/SWMU SITE
- SITE NOT ASSIGNED A WMS-ES IDENTIFICATION
- NON-IRP/SWMU SITE
- POTENTIALLY ELIGIBLE HISTORIC SITE
- DNL NOISE LEVEL (Day-Night Average Decibel Level)
- POTENTIAL ASR-11 SITE



FIGURE 4A-5
GENERAL PLAN
CANNON AFB, NEW MEXICO
COMPOSITE CONSTRAINTS
AND OPPORTUNITIES

3.0 Investment Strategy

The long term Investment Strategy of Cannon AFB is one of open-minded, yet directive planning. The 27 FW is intent on preparing Cannon AFB to execute the mission needs of the USAF with ultimate lethality. To do so, the 27 FW has conducted a lengthy review of all potential concerns and limitations to development. An Investment Strategy has been developed aimed at correcting all possible pitfalls long before the transition process begins.

3.1 Future Development Issues

The primary issues affecting the future growth of Cannon AFB include Housing Privatization, Unit Realignment, and a potential Change in Mission.

Housing Privatization

Due to the Housing Privatization contract set to begin in FY04, the housing responsibilities currently supported by the 27 FW will be changed drastically. After privatization, the obligations of the 27 FW regarding housing will be reduced to the maintenance and repair of 350 leased housing units in the 801 Clovis and 801 Portales areas, as well as oversight of 1,249 privatized housing units.

Unit Realignment

Following the Wing Reorganization of 2002, the 27 FW experienced many changes in the facility utilization plan. Units that were once collocated due to unit organization instead of related missions created requirements for renovation of facilities, which have been programmed and included in our vision.

Potential Change in Mission

In order to be prepared for the potential expansion of the mission at Cannon AFB, the 27 FW has set itself on a course of future development guaranteed not to paint itself into a corner. This multi-use planning philosophy will allow the 27 FW to cross-utilize facilities in the event of a major shift in the Wing mission.

3.2 Major Investment Strategies

Cannon AFB has dedicated itself to a long term Plan of Investment based on the two major facets of refocusing on infrastructure and facility development.

Refocusing on Infrastructure

In order to provide a steady base for the future development of Cannon AFB, the 27 CES has developed thirteen separate Infrastructure Plans to guide the total rehabilitation of the base infrastructure over the next five to seven years. By systematically funding the incremental maintenance and replacement of our utilities and pavements, the 27 FW can ensure the future stability of Cannon AFB for years to come. In conjunction with the infrastructure plans, the 27 FW has reaffirmed its commitment to the recurring work program (RWP). By elevating the priority of the RWP, the 27 FW has established a wing-wide initiative to support and protect the resources already bestowed upon it. This dedication will allow for concentration on replacement of only the most critically worn resources.



Facility Improvement

In addition to refocusing on infrastructure, the 27 FW has dedicated itself to continuing a historically strong push for facility improvements at Cannon AFB. This initiative combines three major efforts to reach the long-term goal of providing adequate facilities for mission accomplishment:

- MILCON – \$5-10M annually
- Sustainment, Restoration, and Modernization by Contract (SRMC) Renovations
- Self Help - \$300-400K annually

3.3 Future Land Use

Future Planning Considerations

The existing base layout and available suitable land limit future development to four alternatives within installation boundaries:

- Infilling small open parcels
- Reusing World War II sites for construction of new facilities
- Consolidating activities and functions where feasible
- Expanding into the open areas east of runway 04/22

Future Development Needs

There is a need to better support current missions, provide flexibility to accept new missions and units, and to improve quality of life (QOL) features.

Additionally, there is a cluster of four inhabited buildings (1800, 1801, 1802 and

1803) that are located within the clear zone of the approach to runway 13 that must be relocated. Building 1800 is a combination TLF/VOQ, 1801 is a transient lodging support facility and Red Cross office, and 1802 and 1803 are Family Support Center facilities. There are currently two MILCON projects being developed to remedy this situation. One will construct a new family support center and the other will construct a new billeting office and DV suites.

The continuing evolutionary development of the base has been, and is being, planned in such a manner that land use patterns have been compatibly arranged in such a way that they enhance functional relationships.

Available land is adequate for today's requirements, and to support future development. Refer to figure 4C-3 for future land Use plans.





4.0 Future Investment and Project Locations

4.1 Project Lists and Sitings

Sections 4.1.1 through 4.1.12 present a complete listing of Cannon AFB unfunded requirements in each program.

4.1.1 Sustainment

This list identifies the 27 FW unfunded sustainment (*EEIC 521/524*) project requirements.

Sustainment Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
Multi	040100	04	Maintain Corrosion Control Systems	50.0	Annual
Multi	040101	04	Maintain Electrical Systems	100.0	Annual
Multi	040102	04	Maintain Fire Protection Systems	100.0	Annual
Multi	040103	04	Maintain Roads/Parking	250.0	Annual
Multi	040104	04	Maintain HVAC Systems	250.0	Annual
Multi	040105	04	Maintain Roofs	50.0	Annual
Multi	040106	04	Maintain Generators	75.0	Annual
Multi	040107	04	Maintain Water Distribution Systems	75.0	Annual
Multi	040108	04	Maintain Carpets	100.0	Annual
Multi	040109	04	Maintain Facility Exteriors	250.0	Annual
Multi	040110	04	Maintain Landscaping	50.0	Annual
Multi	040111	04	Rubber Removal 04/22 & 13/31	70.0	Annual
Multi	040112	04	Maintain Airfield Markings	100.0	Annual
Multi	040113	04	Rpr Roofs	200.0	Annual
Multi	050100	05	Maintain Corrosion Control Systems	50.0	Annual
Multi	050101	05	Maintain Electrical Systems	100.0	Annual
Multi	050102	05	Maintain Fire Protection Systems	100.0	Annual
Multi	050103	05	Maintain Roads/Parking	250.0	Annual
Multi	050104	05	Maintain HVAC Systems	250.0	Annual
Multi	050105	05	Maintain Roofs	50.0	Annual
Multi	050106	05	Maintain Generators	75.0	Annual
Multi	050107	05	Maintain Water Distribution Systems	75.0	Annual
Multi	050108	05	Maintain Carpets	100.0	Annual
Multi	050109	05	Maintain Facility Exteriors	250.0	Annual
Multi	050110	05	Maintain Landscaping	50.0	Annual
Multi	050111	05	Rubber Removal 04/22	40.0	Annual
Multi	050112	05	Maintain Airfield Markings	100.0	Annual
Multi	050113	05	Rpr Roofs	200.0	Annual
Multi	060100	06	Maintain Corrosion Control Systems	50.0	Annual
Multi	060101	06	Maintain Electrical Systems	100.0	Annual
Multi	060102	06	Maintain Fire Protection Systems	100.0	Annual
Multi	060103	06	Maintain Roads/Parking	250.0	Annual
Multi	060104	06	Maintain HVAC Systems	250.0	Annual
Multi	060105	06	Maintain Roofs	50.0	Annual
Multi	060106	06	Maintain Generators	75.0	Annual
Multi	060107	06	Maintain Water Distribution Systems	75.0	Annual

Multi	060108	06	Maintain Carpets	100.0	Annual
Multi	060109	06	Maintain Facility Exteriors	250.0	Annual
Multi	060110	06	Maintain Landscaping	50.0	Annual
Multi	060111	06	Rubber Removal 04/22 & 13/31	70.0	Annual
Multi	060112	06	Maintain Airfield Markings	100.0	Annual
Multi	060113	06	Rpr Roofs	200.0	Annual

4.1.2 Restoration and Modernization

This list identifies the 27 FW unfunded restoration and modernization (*EEIC 522/529*) project requirements. This list includes new mission O&M projects validated by staff, in addition to projects that can be accomplished by Red Horse troop training.

Restoration and Modernization Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
	030240	04	Rpr HVAC, b216	60.0	Straddle
	030241	04	Rpr HVAC, b247	10.0	Straddle
A1	030112	04	Rpr Aircraft Fire Training Fac	335.0	Straddle
A2	030245	04	Rpr Roof Pecos Trail	157.0	Straddle
A3	030246	04	Rpr Roof Self-Help Store	127.0	Straddle
	030247	04	Rpr Roof Burger King	36.0	Straddle
	990107	04	Rpr HVAC, b252	50.0	Straddle
A4	930257	04	Const Structural Fire Training Fac	300.0	Straddle
Multi	022213	04	Rpr Airfield Wiring 04/22	1800.0	
Multi	032213	04	Rpr Airfield Wiring, Txwys	650.0	
Multi	030271	04	Rpr Storm Drainage, Trident & Torch	250.0	
	030226	04	Renovate DV Suites	74.0	
A5	990155	04	Rpr Chapel, b58	600.0	
	030293	04	Demo Abandoned Txwy	20.0	
A5	930257	04	Rpr Chapel HVAC, b58	1,100.0	
A5	930257	04	Renovate Chapel, b58	300.0	
	030288	04	Rpr Billeting Office	65.0	
	030274	04	Rpl Tritium Exit Signs	64.0	
	020168	04	Rpr Billeting & Club Elec Circuit	600.0	
	020167	04	Rpr Dog Kennel Elec Circuit	960.0	
Multi	020117	05	Upgrade 04 Approach to military Std. Re-wire ALSF-1	1,800.0	
Multi	020117	05	Upgrade Threshold Bars at 04/22 to Military Std (Split Out)	600.0	
Multi	030306	05	Rpr Taxiway R	850.0	
A6	020126	05	Const Arm/Dearm Pad 13	475.0	
A7	020127	05	Const Arm/Dearm Pad 31	475.0	
PXLY	020131	05	Constr Range Control Bldg, Melrose AFR	600.0	
	020230	05	Inst Security Doors in Bay, b684	30.0	
	030120	05	Rpr Windows in Avionics Flight Office, b622	20.0	
A8	930036	05	Rpr Dorm 1247	1,500.0	
PXLY	980008	05	Renovate Fire Station 3, Melrose AFR	300.0	
Multi	020170	05	Provide H.V. Feedback to Chavez	420.0	
Multi	020171	05	Bury Overhead H.V. to Dorms	960.0	
Multi	030119	06	Enter Exit lighting Taxi "F", "A"	170.0	
	970040	06	Shoulder Runway 13/31	85.0	
	970041	06	Shoulder Taxiway R	95.0	
A9	030145	06	Rpr Entomology Shop, b212	500.0	
A10	970079	06	Rpr Base Theater, b70	310.0	

	960142	06	Const Cover for Cryogenic Tanks	15.0	
	035000	06	Upgrade Auto Skills Center	8.0	
Multi	020169	06	Bury Overhead H.V. to Trans	380.0	
	020231	06	Rpr Bldg Exterior, b1	80.0	
	980141	06	Rpr Running Track	44.0	
	030337	06	Upgrade Command Post	300.0	

4.1.3 Military Construction (MILCON)

This list identifies the 27 FW unfunded MILCON requirements.

MILCON Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
B1	993002	06	AGE Complex	7,800.0	
B2	903011	07	Approach Lights, RWY 13	1,000.0	
B3	053002	09	Dining Hall/Airmen's Center	9,300.0	
B4	963120	08	Upgrade Munitions Storage Area	4,600.0	
	063002		Communications Facility	12,500.0	
	013004		Family Support/Airmen's Attic	1,600.0	
	043001		Base Library/Education Center	5,600.0	
	053003		Fitness Center	10,800.0	
	033002		Transportation Complex	7,000.0	
	033003		CE Pavements and Equipment Shop	3,000.0	
	063003		Billeting Office/DV Suites	1,500.0	
Multi	063004		Repair Storm Drainage System	8,500.0	

4.1.4 Environmental O&M

This list identifies the 27 FW unfunded environmental O&M project requirements.

Environmental O&M Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
	637824	04	Asbestos Landfill Closure	250.0	
	020115	04	CMS/CMI SWMU 31 Age Washrack	400.0	
	020237	04	MAFR EOD Pit Closure	200.0	
	020235	04	Site Closure SWMU 70 - Final Sampling	75.0	
	050145	05	Close SWMU 101 Detection Wells	60.0	
	020111	05	Phase 3 RFI SWMU 103 Playa Lake	500.0	
	939057	05	Construct Raw Water Distribution System	500.0	
	009002	06	Rpr Base Water Distribution System	5,000.0	
	040123	06	CMS/CMI SWMU 103 Playa Lake	1,500.0	

4.1.5 Environmental Restoration Account (ERA)

This list identifies the 27 FW unfunded ERA project requirements.

Environmental Restoration Account Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
	047006	04	Long Term Monitoring, Landfills 3, 4, & 25	60.5	Annual
	027007	05	Site Inspection - Melrose AFR	1,755.0	
	037007	06	Remedial Investigation - Melrose AFR	400.0	
	047007	07	Feasibility Study - Melrose AFR	375.0	
C1	087008	08	Long Term Monitoring Review, Landfills 3, 4, & 25	540.0	
	057007	08	Remedial Design - Melrose AFR	250.0	
	067007	09	Remedial Action - Construction - Melrose AFR	5,000.0	

4.1.6 801 Housing O&M

This list identifies the 27 FW unfunded housing O&M requirements.

801 Housing O&M Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
	000003	04	Rpr 3 of 6 Playgrounds, Portales	30.0	
	000004	05	Rpr 4 of 6 Playgrounds, Portales	30.0	
	000005	05	Rpr 5 of 6 Playgrounds, Portales	30.0	
Multi	060120	06	Rpr Facility Exterior, 801 Clovis	300.0	

4.1.7 Housing MILCON

Housing at Cannon AFB is being privatized and will require no MILCON projects.

4.1.8 Non-Appropriated Fund (NAF)

This list identifies Cannon AFB unfunded NAF O&M and major construction project requirements.

Non-Appropriated Fund Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
E1	025150		Add/Alter Youth Center, b54	600.0	
E2	025200		Add/Alter Bowling Center, b74	465.0	
E3	990113		Expand Golf Course Maintenance Area	350.0	
	980144		Const Service Ramps, TLF	55.0	
E4	010038		Pave RV Parking Area	100.0	
	990020		Add Laundry Facility, TLF	75.0	
E5	030207		Const Brushless Car Wash	434.0	
	035005		Const Wood Hobby Shop	TBD	
	030228		Convert Merge Room, b1820	TBD	

4.1.9 Army Air Force Exchange Service (AAFES)

There are currently no planned expansion projects for AAFES facilities at Cannon AFB. A comprehensive study has shown that Cannon's existing facilities are exceeding standard services.

4.1.10 Defense Energy Systems Command (DESC)

This list identifies the 27 FW unfunded DESC project requirements.

Defense Energy Systems Command (DESC) Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
	030295	04	Install new Hoover Tanks 2 each	30.0	
	030296	05	Upgrade Hot Pit Fuel/Water Separators to API	35.0	
G1	030297	06	Develop new POL Yard Service Station	185.0	
G2	030298	06	Upgrade Base Fuel Service Station	195.0	
	030299	07	Cover Hot Pit Issue Separators	30.0	
G3	030300	08	Upgrade LFM Shop	130.0	
G4	53001	06	Construct Fill Stands (MILCON)	9300.0	

4.1.11 Anti-Terrorism/Force Protection

This list identifies the 27 FW unfunded anti-terrorism/force protection project requirements.

Anti-Terrorism/Force Protection Project List

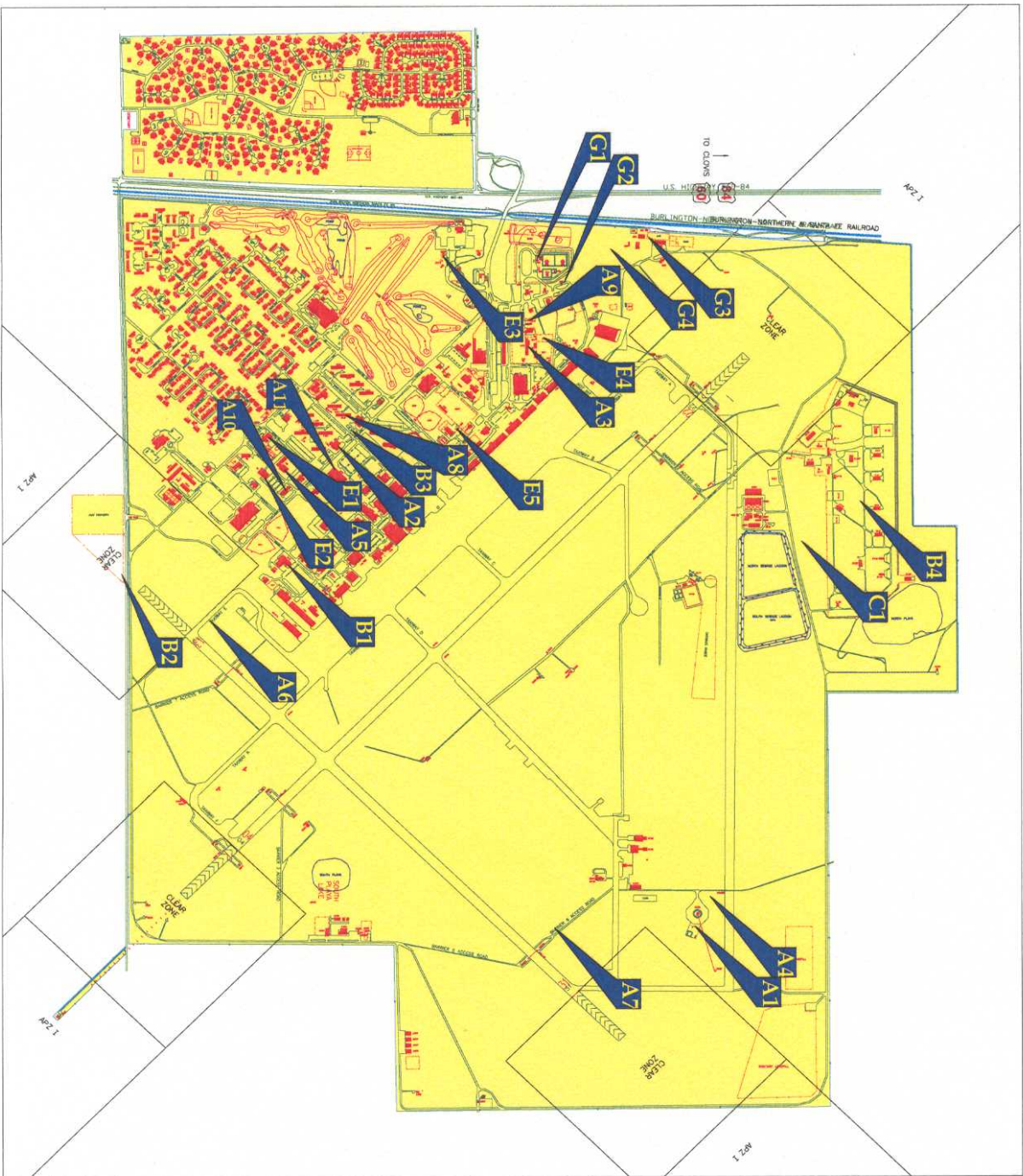
Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
Multi	030289		Inst Mylar, B2110, 2112, 2123, 2124	40.0	
Multi	030294		Rpr Dorm Parking Lots, Ph 1	1,000.0	
Multi	030294		Rpr Dorm Parking Lots, Ph 2	1,000.0	
Multi	030294		Rpr Dorm Parking Lots Ph 3	1,000.0	
Multi			Rpr Main Gate	1,300.0	

4.1.12 Airfield Obstruction Reduction Initiative (AORI)

This list identifies the 27 FW AORI area 1 project requirements.

Airfield Obstruction Reduction Initiative Project List

Map ID	PROJ #	FY	PROJECT TITLE	PA (\$K)	REMARKS
Multi	010029	03	Rpr Airfield Lighting Transformers, Ph 1	500.0	
Multi	010029	03	Rpr Airfield Lighting Transformers, Ph 2	500.0	
Multi	030137	03	Rpr Barrier Shacks, Rnwy 04/22	1,000.0	
Multi	030256	03	Rpr Barrier Shacks, Rnwy 13/31	1,000.0	



APPENDIX B
PUBLIC AND AGENCY COORDINATION

Joy Nicolopolus
U.S. Department of the Interior
U.S. Fish and Wildlife Service
2105 Osuna N.E.
Albuquerque, NM 87113

Clovis-Carter Public Library
701 N. Main St.
Clovis, NM 88101-6658

Portales Public Library
218 S. Avenue B
Portales, NM 88130

Jan Biella
New Mexico Office of Cultural Affairs
Historic Preservation Division,
Room 320, La Villa Rivera
228 East Palace Avenue
Santa Fe, NM 87501

Cannon AFB Library
107 W. Trident Avenue
Cannon AFB, NM 88103



**DEPARTMENT OF THE AIR FORCE
27TH CIVIL ENGINEER SQUADRON (ACC)
CANNON AIR FORCE BASE NEW MEXICO**

Mr. Donald R. White
Chief, Environmental Flight
506 N DL Ingram Blvd
Cannon AFB NM 88103-5003

Ms. Jan Biella
New Mexico Office of Cultural Affairs
Historic Preservation Division
La Villa Rivera Building
228 E. Palace Ave.
Santa Fe NM 87501

Dear Ms. Biella

The United States Air Force (Air Force) is in the process of preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from implementing its Wing Infrastructure Development Outlook (WINDO) for Cannon Air Force Base (CAFB), New Mexico. The WINDO is a plan identifying construction projects needed to improve the infrastructure of CAFB and Melrose Air Force Range (MAFR).

The Proposed Action consists of implementing infrastructure improvement projects on CAFB or MAFR. The construction projects would take place beginning this year and continue through Fiscal Year (FY) 2011. In addition to the Proposed Action, a No-Action alternative will be analyzed in the EA. Attachment 1 is a copy of the Draft EA providing a description and draft analysis of the proposed action.

If you have any concerns or comments, please respond by August 25, 2004 to: Mr. Mike Rierson, 506 N DL Ingram Blvd, Cannon AFB NM 88103 or (505) 784-1114. Thank you for your assistance in this matter.

Sincerely

A handwritten signature in black ink, reading "Donald R. White", is positioned below the word "Sincerely".

DONALD R. WHITE, GS-13

Attachment:
Draft EA



**DEPARTMENT OF THE AIR FORCE
27TH CIVIL ENGINEER SQUADRON (ACC)
CANNON AIR FORCE BASE NEW MEXICO**

Mr. Donald R. White
Chief, Environmental Flight
506 N DL Ingram Blvd
Cannon AFB NM 88103-5003

Ms. Joy Nicolopolus
U.S. Department of the Interior
U.S. Fish and Wildlife Service
2105 Osuna NE
Albuquerque NM 87113

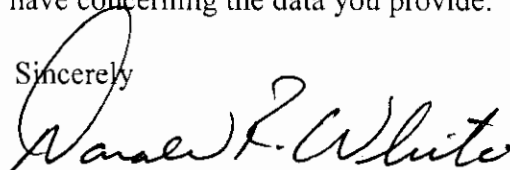
Dear Ms. Nicolopolus

The United States Air Force (Air Force) is in the process of preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from implementing its Wing Infrastructure Development Outlook (WINDO) for Cannon Air Force Base (CAFB), New Mexico. The WINDO is a plan identifying construction projects needed to improve the infrastructure of CAFB and Melrose Air Force Range (MAFR).

The Proposed Action consists of implementing infrastructure improvement projects on CAFB or MAFR. The construction projects would take place beginning this year and continue through Fiscal Year (FY) 2011. In addition to the Proposed Action, a No-Action alternative will be analyzed in the EA. Attachment 1 is a copy of the Draft EA providing a description and draft analysis of the proposed action.

In compliance with the Endangered Species Act, we would like to request information regarding listed, threatened, endangered, candidate and species proposed to be listed which occur or may occur in the potentially affected area. We request you provide this information to our POC, Mr. Mike Rierson (505-784-1114), by August 25, 2004. We appreciate your assistance in providing this information, as well as any concerns you may have regarding the EA and any potential effects of the proposal. We would also appreciate your help in identifying a point of contact for any follow-up questions we may have concerning the data you provide.

Sincerely


DONALD R. WHITE, GS-13

Attachment:
Draft EA



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna NE

Albuquerque, New Mexico 87113
Phone: (505) 346-2525 Fax: (505) 346-2542

August 23, 2004

Cons. # 2-22-04-I-0636

Mr. Mike Rierson
27 CES/CEV
506 N DL Ingram Boulevard
Cannon Air Force Base, NM 88103-5003

Dear Mr. Rierson:

Thank you for your August 11, 2004, letter, and accompanying draft Environmental Assessment, requesting information on threatened or endangered species that could be affected by the proposed United States Air Force Wing Infrastructure Development Outlook (WINDO) project. The WINDO is a plan for construction/demolition/renovation projects needed to improve the physical infrastructure of Cannon Air Force Base and Melrose Air Force Range located in Curry and Roosevelt Counties, New Mexico.

We have enclosed a current list of federally endangered, threatened, proposed, and candidate species, and species of concern that may be found in Curry and Roosevelt Counties, New Mexico.¹ Under the Endangered Species Act, as amended (Act), it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with us further. If your action area has suitable habitat for any of these species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts. Please keep in mind that the scope of federally listed species compliance also includes any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects.

Candidates and species of concern have no legal protection under the Act and are included in this document for planning purposes only. We monitor the status of these species. If significant declines are detected, these species could potentially be listed as endangered or threatened. Therefore, actions that may contribute to their decline should be avoided. We recommend that candidates and species of concern be included in your surveys.

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their

¹ Additional information about these species is available on the Internet at <http://nmrareplants.unm.edu>, <http://nmnhp.unm.edu/bisonm/bisonquery.php>, and <http://ifw2es.fws.gov/endangeredspecies>.

natural and beneficial values. We recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands. These habitats should be conserved through avoidance, or mitigated to ensure no net loss of wetlands function and value.

The Migratory Bird Treaty Act provides for a year-round closed season for non-game birds and prohibits the taking of migratory birds, nests, and eggs, except as permitted by the U.S. Fish and Wildlife Service (Service). Many migratory birds are killed each year as a result of tower collisions. In poor weather conditions (e.g., low cloud ceiling, fog, rain, poor visibility), towers may not be visible to migrating birds and can cause massive bird kills since nocturnal migrating species are attracted by lights to towers under these conditions. Potential impacts to migratory birds would progressively increase in rural areas. Towers greater than 200 feet, and towers with lights are known threats to migrating birds. The Service recommends first co-locating transmitters and other equipment on existing towers whenever possible. Towers requiring or otherwise using lighting should use white flashing strobe lights as opposed to a continuous light or red beacon light. Light attributes that reduce danger to migrating birds include dim lights, and lights with long flash time intervals and short flash duration. These have been demonstrated to reduce the danger to migrating birds. Obsolete, non-functional towers in the area should be removed if possible. Please also refer to: <http://migratorybirds.fws.gov/issues/towers/comtow.html> for additional information on this topic.


To minimize the likelihood of adverse impacts to all birds protected under the MBTA, we recommend construction activities occur outside the general migratory bird nesting season of March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until nesting is complete.

We suggest you contact the New Mexico Department of Game and Fish for information regarding fish and wildlife of State concern.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. In future correspondence regarding this project, please refer to consultation # 2-22-04-I-0636. If you have any questions about the information in this letter, please contact Nancy Baczek at the letterhead address or at (505) 761-4711.

Sincerely,



 Susan MacMullin
Field Supervisor

Enclosure

Mr. Mike Rierson

3

cc: (w/o enc)

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico

FEDERAL ENDANGERED, THREATENED,
PROPOSED, AND CANDIDATE SPECIES
AND SPECIES OF CONCERN IN NEW MEXICO
Consultation Number 2-22-04-I-0636

August 23, 2004

Curry County

ENDANGERED

Black-footed ferret (*Mustela nigripes*) **
Interior least tern (*Sterna antillarum*)

THREATENED

Bald eagle (*Haliaeetus leucocephalus*)

CANDIDATE

Black-tailed prairie dog (*Cynomys ludovicianus*)
Lesser prairie chicken (*Tympanuchus pallidicinctus*)

SPECIES OF CONCERN

Swift fox (*Vulpes velox*)
American peregrine falcon (*Falco peregrinus anatum*)
Arctic peregrine falcon (*Falco peregrinus tundrius*)
Baird's sparrow (*Ammodramus bairdii*)
Mountain plover (*Charadrius montanus*)
Western burrowing owl (*Athene cunicularia hypugea*)
Yellow-billed cuckoo (*Coccyzus americanus*)

Roosevelt County**ENDANGERED**

Black-footed ferret (*Mustela nigripes*)**

THREATENED

Bald eagle (*Haliaeetus leucocephalus*)

CANDIDATE

Black-tailed prairie dog (*Cynomys ludovicianus*)

Lesser prairie chicken (*Tympanuchus pallidicinctus*)

Sand dune lizard (*Sceloporus arenicolus*)

SPECIES OF CONCERN

Swift fox (*Vulpes velox*)

Western red bat (*Lasiurus blossevillii*)

American peregrine falcon (*Falco peregrinus anatum*)

Arctic peregrine falcon (*Falco peregrinus tundrius*)

Baird's sparrow (*Ammodramus bairdii*)

Mountain plover (*Charadrius montanus*)

Western burrowing owl (*Athene cunicularia hypugea*)

Yellow-billed cuckoo (*Coccyzus americanus*)

Sandhill goosefoot (*Chenopodium cycloids*)

Index

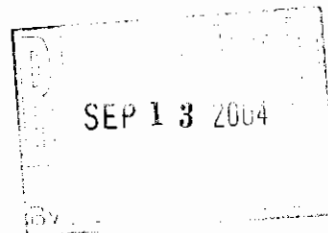
Endangered=	Any species which is in danger of extinction throughout all or a significant portion of its range.
Threatened =	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Candidate =	Candidate Species (taxa for which the Service has sufficient information to propose that they be added to list of endangered and threatened species, but the listing action has been precluded by other higher priority listing activities).
Proposed =	Any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under section 4 of the Act.
Species of Concern =	Taxa for which further biological research and field study are needed to resolve their conservation status <u>OR</u> are considered sensitive, rare, or declining on lists maintained by Natural Heritage Programs, State wildlife agencies, other Federal agencies, or professional/academic scientific societies. Species of Concern are included for planning purposes only.
* =	Introduced population
** =	Survey should be conducted if project involves impacts to prairie dog towns or complexes of 200-acres or more for the Gunnison's prairie dog (<i>Cynomys gunnisoni</i>) and/or 80-acres or more for any subspecies of Black-tailed prairie dog (<i>Cynomys ludovicianus</i>). A complex consists of two or more neighboring prairie dog towns within 4.3 miles (7 kilometers) of each other.
*** =	Extirpated in this county
† =	May occur in this county from re-introductions in Colorado.



STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

228 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87501
(505) 827-6320

BILL RICHARDSON
Governor



2 September 2004

Mr. Donald R. White
Chief, Environmental Flight
506 N DL Ingram Blvd.
Cannon AFB, NM 88103-5003

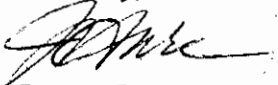
RE: Draft EA, Wing Infrastructure Development Outlook (WINDO) Cannon AFT and
Melrose Air Force Range: HPD Log # 71914

Dear Mr. White:

Thank you for submitting the above referenced draft EA for our review and comment. In regard to the architectural resources in the Area of Potential Effect (APE), the draft report cites personal communication (Chandler, 2004) that implies that the Cold War resources are not considered eligible for the NRHP (see pgs 22-23). Our office does not have individual historic building inventory forms for the resources in question (specifically, Building #s 10, 186, 211, 212, 214, 252, 310, 388, 391, 444, 840, 841, 1199, 1249, 2328, 1800). Therefore, it is not possible to provide substantive review and comment and/or concur with your recommendation that their demolition would not have an effect to historic properties.

Our recommendation would be that CAFB submit inventory forms for the resources in question for our review as part of this process. I will be happy to supply copies of the New Mexico Historic Cultural Property Inventory (HCPI) form for your use, however, most Department of Defense facilities that work with our office usually submit forms of their own design. Additionally, I would be happy to come out to CAFB at your convenience to review the APE in person and consult with you and/or your staff regarding determinations of eligibility and potential effect during the EA planning process for the historic architectural resources in question.

Sincerely,


James Hare
Architectural Historian.
(505) 827-7411

APPENDIX C
FEDERAL AND STATE LISTED AND CANDIDATE PLANT AND
ANIMAL SPECIES AND SPECIES OF CONCERN

New Mexico Species of Concern - Roosevelt County

Common Name	SCIENTIFIC NAME	FWS	NM	FS	BLM	NM	FWS
		ESA	WCA	R3	NM	Sen	SOC
Texas Horned Lizard	Phrynosoma cornutum	-	-	S	S	-	-
Sand Dune Lizard	Sceloporus arenicolus	C	T	-	S	-	-
Desert Kingsnake	Lampropeltis getula splendida	-	-	S	-	-	-
Mississippi Kite	Ictinia mississippiensis	-	-	S	-	-	-
Bald Eagle	Haliaeetus leucocephalus	AD, T mg	T	S	-	-	-
Swainson's Hawk	Buteo swainsoni	-	-	S	-	-	-
Ferruginous Hawk	Buteo regalis	-	-	S	S	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM m	T	S	-	-	S
Lesser Prairie-Chicken	Tympanuchus pallidicinctus	C	-	-	S	S	-
Western Snowy Plover	Charadrius alexandrinus nivosus	-	-	S	-	-	-
Mountain Plover	Charadrius montanus	PT	-	S	-	S	-
Long-billed Curlew	Numenius americanus americanus	-	-	S	-	-	-
Yellow-billed Cuckoo	Coccyzus americanus occidentalis	-	-	S	-	S	S
Flammulated Owl	Otus flammeolus	-	-	S	-	-	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	-	S	-	S
Loggerhead Shrike	Lanius ludovicianus	-	-	-	S	S	-
Gray Catbird	Dumetella carolinensis ruficrissa	-	-	S	-	-	-
American Redstart	Setophaga ruticilla tricolora	-	-	S	-	-	-
Baird's Sparrow	Ammodramus bairdii	-	T	S	S	-	S
McCown's Longspur	Calcarius mccownii	-	-	S	-	-	-
Least Shrew	Cryptotis parva	-	T	-	-	-	-
Western Red Bat	Lasiurus blossevillii	-	-	S	-	S	-
Eastern Red Bat	Lasiurus borealis	-	-	S	-	S	-
Black-tailed Prairie Dog	Cynomys ludovicianus ludovicianus	C m	-	-	-	S	-
Swift Fox	Vulpes velox velox	-	-	S	-	S	S
Ringtail	Bassariscus astutus	-	-	S	-	S	-
Western Spotted Skunk	Spilogale gracilis	-	-	-	-	S	-
Sandhill White-tailed Deer	Odocoileus virginianus texana	-	-	-	-	S m	-

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN RIO ARriba COUNTY

Gray Wolf	Canis lupus	
Black-footed Ferret	Mustela nigripes	(extirpated from NM)
Merriam's Elk	Cervus elaphus merriami	(extinct)
American Bison	Bos bison	

New Mexico Species of Concern - Curry County

Common Name.....	SCIENTIFIC NAME.....	FWS..	NM...	FS.	BLM...	NM...	FWS.
		ESA	WCA	R3	NM	Sen	SOC
Texas Horned Lizard	Phrynosoma cornutum	-	-	S	S	-	-
Desert Kingsnake	Lampropeltis getula splendida	-	-	S	-	-	-
Mississippi Kite	Ictinia mississippiensis	-	-	S	-	-	-
Bald Eagle	Haliaeetus leucocephalus	AD, T mg	T	S	-	-	-
Swainson's Hawk	Buteo swainsoni	-	-	S	-	-	-
Ferruginous Hawk	Buteo regalis	-	-	S	S	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM, m	T	S	-	-	S
Lesser Prairie-Chicken	Tympanuchus pallidicinctus	C	-	-	S	S	-
Western Snowy Plover	Charadrius alexandrinus nivosus	-	-	S	-	-	-
Mountain Plover	Charadrius montanus	PT	-	S	-	S	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	-	S	-	S
Loggerhead Shrike	Lanius ludovicianus	-	-	-	S	S	-
Gray Catbird	Dumetella carolinensis ruficrissa	-	-	S	-	-	-
Black-tailed Prairie Dog	Cynomys ludovicianus ludovicianus	C m	-	-	-	S	-
Swift Fox	Vulpes velox velox	-	-	S	-	S	S
Ringtail	Bassariscus astutus	-	-	S	-	S	-

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN CURRY COUNTY

Gray Wolf	Canis lupus	
Black-footed Ferret	Mustela nigripes	(extirpated from NM)
Merriam's Elk	Cervus elaphus merriami	(extinct)
American Bison	Bos bison	